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INTEGRATED ENERGY POLICIES REPORT COMMITTEE

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COMMITTEE WORKSHOP ON CLIMATE CHANGE

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P R O C E E D I N G S

COMMISSIONER GEESMAN: This is day 45 of the workshops for the California Energy Commission's 2005 Integrated Energy Policy Report. I'm John Geesman, the Presiding Member of the Commission's Integrated Energy Policy Report Committee.

To my left, Commissioner Jim Boyd, the Associate Member of the IEPR Committee: to his left, Secretary Alan Lloyd, Cal EPA; and to Alan's left Theresa Cho, Staff Adviser to Commissioner Diane Grueneich of the California Public Utilities Commission.

To my right my old friend, Steve Larson, Executive Director of the Public Utilities Commission. Steve is the Chair of one of the most distinguished fraternities in state government, the Society of former Directors of the California Energy Commission.

Welcome to you all. This is the first full day that we have dedicated specifically to the subject of climate change. There is a lot of work underway. Ultimately it will culminate in the Governor's plan at the beginning of 2006, for which Secretary Lloyd is primarily responsible.

1 Our efforts today are aimed at gathering
2 the inputs which will make up a part of the
3 Integrated Energy Policy Report, to be adopted by
4 the Energy Commission in early November of this
5 year.

6 Commissioner Boyd?

7 COMMISSIONER BOYD: Thank you,
8 Commissioner Geesman. I'd like to add my welcome
9 to yours to our distinguished colleagues from the
10 PUC and to Secretary Lloyd.

11 I'm particularly pleased that Alan Lloyd
12 could be here with us in light of the important
13 assignment he's received from the Governor on the
14 subject of climate changes, and his responsibility
15 now to produce by next January, at the request of
16 the Governor, certain inputs on strategies as well
17 as creating a Climate Advisory Team.

18 I'm very pleased that the staff has
19 assembled a very impressive group of speakers for
20 us today, and also I note we'll be receiving input
21 from our consultant, Ned Helm from the Center for
22 Clean Air Policy, who has been working for the
23 Commission on the subject of climate change for
24 some time now and to whom we've devoted all of his
25 time basically to the Climate Change Advisory

1 Committee, which spent it's entire day in this
2 very room yesterday, and there's several members
3 in the audience of that group.

4 It is now wrapping up its work for us,
5 which was centered around inputs to this very
6 process, the 2005 Integrated Energy Policy Report.

7 So I look forward to today's events and,
8 harkening back to the Energy Commission's long
9 history in climate change, which certainly pre-
10 dates me by almost decades.

11 Because of the issue, the fact that the
12 use of the, the production and use of energy
13 worldwide, as well as in California, is at the
14 root of most of the emissions of greenhouse gases.

15 In California we're a little atypical in
16 that it comes from the transportation sector, thus
17 Secretary Lloyd has a lot of responsibility, but
18 you can't get away from the use of all other
19 energy sources, so our IEPR in 2003 acknowledged
20 this, and we continue to be concerned about
21 climate change.

22 So with that lengthy welcome and hello I
23 thank you, Commissioner Geesman, and defer to
24 Secretary Lloyd for some remarks.

25 MR. LLOYD: I'll keep my remarks brief.

1 Again, I thank you very much for the invitation,
2 Commissioners Geesman and Boyd and my colleagues
3 up here. It's really a pleasure to be here.

4 I stress that, while I've been given the
5 responsibility under Executive Order S-3-05 to
6 coordinate the effort on climate change, there's
7 no way in which I would feel at all confident to
8 be able to deliver to him a reasonable product
9 without the tremendous work being done by the
10 Energy Commission.

11 And I've become educated, in all
12 honesty, over the last month of how much work's
13 been going on, and sometimes I've got some of that
14 information incorrect. And so I look forward very
15 much to working together with the Commission, with
16 the staff, as we in fact head up this daunting
17 task.

18 And I'll also compliment the Energy
19 Commission and staff for the caliber of people
20 they've lined up today, and unfortunately I've
21 only got a couple of hours, but I know we'll get
22 the reports back, so thank you so much and again
23 thank all the people here.

24 And the wonderful thing, I think we have
25 an opportunity to make a real difference, given

1 what the Governor's asked us to do, but we can
2 only do that working as a team, with CEC, with
3 PUC, with the rest of the Cabinet, and obviously
4 with the members of Cal EPA.

5 So I look forward very much indeed, and
6 I must say that, as a token to Commissioner Boyd
7 last week and as Commissioner Geesman said, 45
8 days must say that the staff of the Energy
9 Commission show tremendous courage in flooding the
10 Commissioners as much as they do with all these
11 hearings, so --.

12 I don't think we have the same amount of
13 courage over at 1001 I Street. Thank you.

14 COMMISSIONER GEESMAN: Thank you Alan.
15 Our first presentation will come from Ned Helme,
16 the Center for Clean Air Policy.

17 MR. HELME: Commissioners and Secretary
18 Lloyd and other distinguished panelists, I really
19 appreciate the opportunity to speak with you this
20 morning and to take you through the results of a
21 year's worth of work with the Climate Change
22 Advisory Committee that's been serving the CEC.

23 This work this morning, I'm going to
24 take you through both the analytical work we've
25 done and the thinking we've done about policy

1 options that might be used to achieve some of the
2 reductions that are identified here.

3 I see we're having a little technical
4 difficulty here . . . okay, while they're getting
5 it set up, I'll just give you the big picture.

6 So what I'm going to present first is
7 sort of an overall sense of the analysis that
8 we've done. This is a combination of work done by
9 CCAP and done by ICF and other consultants to the
10 Commission.

11 I'll give you a sense of the numbers,
12 and then I'll give you a sense of broad brush
13 options. Then I'll go back and take you through
14 specific sectors and some thoughts on the
15 particular policy options that might work best
16 with those specific sectors.

17 I think the big picture message here is
18 that there's no silver bullet for California.
19 Unlike some other states, you have a very diverse
20 inventory, emissions from a lot of different
21 sectors, there's not an obvious place you just
22 target to get all the reductions, you really have
23 to have a strategy that will cover a number of
24 different sectors.

25 And the strategies, I think it's not a

1 matter of finding a one size fits all strategy,
2 it's really a matter of targeting the strategies
3 to a particular sector, so if you decided that a
4 particular sector, say cement, is one you want to
5 see reductions from there may be a different
6 strategy for that then there eis for electricity
7 or for petroleum refining or another area. And
8 then I'll end with some conclusions.

9 Here's the picture, this is the most
10 recent inventory, 2002, put together by the CEC.
11 You'll note, if you've seen these earlier, this
12 includes imported electricity, it's there sort of
13 pinkish color here on the left, 51 million tons.

14 Not surprisingly, the biggest number of
15 course is transportation, the light blue down
16 between 3:00 and 7:00 o'clock on the little pie
17 here is the largest piece of the inventory.

18 And then the two electricity numbers are
19 basically the purple and the pink. That's the
20 second largest sector. And then the third largest
21 is really petroleum refining and the industrial
22 sector.

23 So those are really the obvious targets
24 in terms of the numbers, in terms of where the net
25 emissions are in California.

1 In terms of our analysis, as I
2 mentioned, this is a combination analysis of work
3 that we've done and work that ICF and other
4 consultants to the PIER program at CEC have done.

5 We've identified in our package of
6 reductions 44 million tons in 2010, and about 117
7 million in 2020. These would be additional to the
8 measures identified in the Governor's announcement
9 on June 1st, which were measures already underway,
10 and I'll show you in a minute the slide that lays
11 out what these are, but those were about a 23
12 million ton reduction in 201 and a 70 million ton
13 reduction in 2020.

14 Finally what I'll show you is, we have
15 not completed the analysis on the power sector and
16 the petroleum refining sector. We've done some
17 estimates of what might be possible from these
18 sectors assuming that they would meet the same
19 sort of target the Governor set for the state as a
20 whole. So you'll see the picture as it comes
21 together.

22 Here's the reductions by sector. Again,
23 this is the CCAP/ICF reductions. As you can see,
24 the biggest opportunities, and remember this
25 doesn't include Pavley transportation 65 million

1 tons in 2020, that's independent of the Pavley
2 standards, that's other measures, and I'll show
3 you a little bit what those are.

4 You can also see a big number from
5 methane, ag forestry as well, really substantial
6 numbers.

7 Here's the listing from the June 1st
8 announcement by the Governor, which shows you the
9 tons that are underway under policies in
10 California. And looking at this you can see the
11 Pavley standards are the top line, we're talking
12 about 30 million tons in 2020. Probably the
13 single biggest number of any of the measures that
14 are available here.

15 You can see the second one under those
16 associated with the Energy Commission and the PUC,
17 accelerated RPS, basically 11 million tons in
18 2020, again a fairly substantial number. And then
19 the others are sort of straightforward. We've all
20 seen this before I think.

21 Now this is a key slide. This sort of
22 brings it all together in one place to give you a
23 sense of how this fits together with the targets
24 that the Governor announced and where we would be
25 in terms of the numbers.

1 So the first line shows you our base
2 case. 2010 is drawn directly from the
3 announcement on June 1st, 538 was the estimated
4 baseline emissions, again this includes power
5 imports from Rocky Mountain western states, coal-
6 fired primarily.

7 And in 2020 we've done some
8 extrapolations, so we've a range there of 575 to
9 590. So that's where we'll be, business as usual,
10 in those years when the targets kick in.

11 Now, 2000 emission levels, we're
12 basically at 489 based on the CEC inventory,
13 including imported electricity. So that tells you
14 the target, the reduction needed for the first
15 phase, the 2010 target of reaching 2000 levels, is
16 basically 49 million tons of reductions.

17 And if we skip down a couple of lines
18 you can see the CCAP/ICF measures, along about
19 line seven. We're estimating about 44 million
20 tons from those measures, and then below that, 23
21 from the measures that are already underway.

22 So you can see, the sum total there of
23 67 exceeds the target of 49. So you can see that
24 between the measures that we've identified and the
25 studies we've done with ICF and our own studies

1 and the work that was done on the California
2 measures that are underway, we basically have more
3 than enough tons to get there.

4 And this does not include, again, the
5 power sector and petroleum refining. So with our
6 estimates of petroleum refining and the power
7 sector you've got another 17 million. So you can
8 see there's substantial number of tons here
9 available in terms of identifiable reductions to
10 meet that target for 2010 of reaching 2000 level
11 emissions in California.

12 I'm not talking about costs, I'm just
13 talking about technical potential of options that
14 we looked at.

15 In terms of 2020 the same process, if
16 you'll look down to the fourth line, 1990
17 emissions would be target, 1990 emissions were
18 439, so the difference is a range of 136 to 151,
19 in other words that's the level of reductions we
20 need to achieve in California to meet the target
21 in 2020.

22 The CCAP/ICF measures, we estimate about
23 117 million tons. The measures already underway,
24 again Pavley being the biggest one and accelerated
25 RPS being the other, are about 70 million tons, so

1 you've got a total of 187, again well above the
2 target that we need to reach based upon the
3 Governor's statement.

4 And then adding to that the potential in
5 power and refining sectors, again haven't done the
6 economic analysis yet so this is more of a
7 technical potential number, 32.

8 So you can see, in terms of the big
9 picture, meeting these two targets, the 2010 and
10 2020 target, there are plenty of reductions
11 available. And the key question is what are the
12 prices of those reductions.

13 And here's our estimate of the measures
14 that we looked at. So this is just the CCAP/ICF
15 numbers where we had cost estimates. And you can
16 see, in the range of under \$20 a ton we're talking
17 about 27 million tons in 2010; 29 million tons
18 under \$50. So you get a sense of the price.

19 And then here is a key slide to show you
20 how different sectors fare in terms of, you know,
21 if we're thinking about this and saying where
22 would we go to get these reductions, if we were
23 looking at this from a pure cost effectiveness
24 standpoint, which sectors are the best
25 opportunities for reaching these targets at the

1 lowest cost.

2 And so the column on the far left shows
3 you measures that are either net savings or
4 measures that are no cost to pursue. And you can
5 see the purple box is landfill methane reductions,
6 the yellow box is manure management, which is
7 primarily biodigesters on the dairy farms in the
8 valley.

9 And you can see pretty substantial
10 numbers there in all three, in the zero to \$20
11 factor.

12 High GWP gases, semiconductor industry,
13 small as it starts but then grows significantly as
14 you get towards the \$20 price, and then cement
15 industry is the one at the top in the light blue,
16 you can see both of those are under \$10 a ton.

17 And the royal blue is basically ag and
18 forestry, sinks measures.

19 So you can see looking at this, if
20 you're looking at this from a pure cost standpoint
21 these are the kinds of opportunities we can pursue
22 to reach these targets.

23 This is the same slide for 2020. I want
24 to note there were no transportation measures in
25 that 2010 target, that's because the prices of the

1 transportation measures tend to be higher per ton
2 than the things you get for manure management or
3 cement or landfills or power sector or other
4 areas.

5 You'll see here in the 2020 time frame
6 we begin to see a big pink line on the right, I
7 guess that's pink, that's freight opportunities.
8 It's truck idling, electrification, this is ports,
9 aviation, other sectors, so a big opportunity
10 there in terms of tons, obviously the price is
11 higher than what we've been talking about on the
12 other sets of measures.

13 But again, the same kind of pattern, you
14 can see landfills are big, manure management is
15 very significant, cement is a good opportunity,
16 and the high GWP gas of the semiconductors are
17 pretty good in terms of looking at cost.

18 So remember, as we think about this,
19 cost isn't the only factor that you've got to
20 think about. What's the policy, how hard is it to
21 do, is it politically feasible, those kinds of
22 questions, but this gives you a sense of what the
23 numbers look like.

24 I'll stop there if there's any questions
25 on this part before I go into the options.

1 COMMISSIONER GEESMAN: What types of
2 measures did you consider under transportation?
3 You said that one of the graphs you had had the
4 Pavley reductions. I presume these others are all
5 incremental to Pavley?

6 MR. HELME: That's right. We looked at
7 things like freight reduction, as I mentioned, we
8 looked at smart growth kinds of things, we looked
9 at alternate fuels, we drew on the studies that
10 were done for the CEC on alternate fuels and
11 petroleum reduction studies, there's been an
12 update done in just the last month or so and we
13 drew on those numbers.

14 And I'll show you that when we get to
15 the details on transportation.

16 MS. CHO: I have a question about your
17 baseline, going back a couple of slides.

18 MR. HELME: Okay.

19 MS. CHO: Can you explain a little bit
20 more about the assumptions that go into the
21 baseline? Do you take out all the strategies
22 already underway?

23 MR. HELME: No. Baseline basically
24 includes, doesn't include -- the strategies
25 underway are not included, they're in the

1 baseline.

2 MS. CHO: Right.

3 MR. HELME: So you've got the tons for
4 Pavley, they're in here, and then we subtract the
5 tons below. So the baseline assumes none of
6 those, either the strategies underway nor the
7 CCAP/ICF things that are undertaken.

8 So this is business as usual without the
9 advanced renewables and without Pavley. So it
10 assumes the current 20 percent RPS, but not beyond
11 that.

12 MS. CHO: The current 20 percent by
13 2010?

14 MR. HELME: Right, 2010. Okay?

15 All right, let me shift gears and talk a
16 little bit about the options broadly. What I'll
17 do is take you through the broad options and then
18 go back to the individual sectors and talk about
19 the numbers in those individual sectors and our
20 sense of which options fit the best.

21 As I mentioned at the outset, the sense
22 we had is that you really want to mix and match,
23 you don't have a silver bullet that is the option
24 that works across all sectors, you really have to
25 think about the nature of the data in the sector,

1 is the baseline data good enough to do a cap, is
2 it better to do it on a voluntary basis, should we
3 do a credit-based approach, those kinds of things.

4 So here's the overall view, mandatory
5 approaches to take. Obviously technology based
6 standards is the traditional kind of things that
7 CARB has done over the years.

8 Intensity standards and benchmarks.
9 This is a place where you'd do carbon per barrel
10 of aviation fuel as a way to regulate. Instead of
11 a hard cap you'd do it on a intensity basis by
12 product.

13 Cap and trade, pretty straightforward,
14 we've talked about that a fair amount.

15 Setting an overall cap for a sector or
16 for a group of sectors and having to reach that
17 absolute target.

18 Pollution fees or taxes, and then
19 finally monitoring and reporting, the sense that
20 there's clearly the need for some better data in a
21 lot of these sectors, and mandatory reporting
22 might help us go a long way toward having a good
23 sense of what this program could do.

24 On the voluntary side we've got
25 negotiated agreement, incentive programs -- these

1 could be tax credits, tax incentives. In Europe
2 we've seen programs where governments have
3 actually bought credits, both the UK and the
4 Netherlands have had programs where they purchase
5 credits from sectors.

6 They offered a bounty, much like the
7 California renewable reverse auction kind of
8 approach.

9 Voluntary programs, clearly we've seen a
10 lot of those in the US, and sector agreements that
11 move towards that.

12 Education assistance, and then finally
13 removal of barriers. One of the things we found,
14 interestingly, in this analysis was that in some
15 cases we got some measures that are very cheap
16 that aren't happening because there are certain
17 barriers existing today.

18 For example in the cement industry,
19 CalTrans has a standard that prevents blended
20 cement. We change that standard we get a lot of
21 those options to play in the market, so we'll talk
22 about that as well.

23 Technology based standards is the first
24 one. Again this is sort of like the CARB
25 standards, building codes, appliance standards.

1 The advantages here, you can mandate a
2 desired level of technical improvement on the
3 entire sector, so you don't have the sort of free
4 rider problem, everybody's in.

5 Disadvantage, you may not get the
6 reduction target you're after. You may be picking
7 winners in terms of the technology, and you might
8 pick the wrong technology, and it may be more
9 costly. Sometimes going with a technology
10 approach ends up being more expensive than you
11 might get if you let the market function.

12 Intensity standards, a variation on the
13 technology standard. Here, rather than a hard
14 technology fix that basically says let's have a
15 carbon per ton of cement or carbon per barrel of
16 aviation fuel, it would look at the benchmarking
17 that's been done in the field and figure out what
18 level's appropriate for the market in terms of
19 this particular industry.

20 Advantages here, it does apply to the
21 whole sector. It gives you some flexibility in
22 terms of compliance. Downside, it may not get you
23 the target, because an intensity target obviously
24 encourages growth.

25 This is something that some developing

1 countries are very much in support of, when we're
2 talking at the international level of how to
3 handle climate, there's a scenario that developing
4 companies take some interest in, because they way
5 to be able to grow their industries but they're
6 willing to grow them in a more carbon friendly
7 way. And so this is a way to do that without
8 limiting growth.

9 And you can set this up win a way to
10 trade from a more difficult hard cap.

11 Cap and trade, you all have heard a lot
12 about that. Good examples, the European Union's
13 emissions trading system is probably the bus.
14 It's underway now involving six major sectors plus
15 the electricity sector.

16 This involves hard caps, allocation of
17 the tons to different parties and then trading
18 between the parties to meet the target. I would
19 note here that one of the things that doesn't get
20 talked about so often when we talk about cap and
21 trade is, once you've decided you want to do this,
22 then it gets more complicated.

23 The issue of how to allocate the
24 allowances, which companies get how many
25 allowances, what's their level to start with, do

1 we auction the allowances, do we sell them and use
2 the money to reduce the cost of technology or not,
3 so --.

4 As we think about cap and trade it's not
5 just setting a cap, it's also deciding who gets
6 what share of the pie and certainly the experience
7 in the US and in the EEU has been that's where the
8 battle really breaks out, over how to divide up
9 the pie. We've seen that recently in Europe in
10 this area.

11 Advantages. It encourages the most
12 cost-effective approach. It does push technology.
13 It doesn't lock in a particular technology. If I
14 can invent a new technology that's cheaper than my
15 competitors I can steal a place in the
16 marketplace, whereas with a technology standard,
17 once a technology's been defined there's not
18 really an incentive to go beyond that technology,
19 whereas here you make more money, you've made the
20 ability to do something more effectively and
21 cheaper very attractive to a company.

22 So it does tend to mobilize the market
23 and mobilize the private sector.

24 Disadvantage, it may not work for all
25 sectors. And I'll talk a little bit later about

1 landfills and some of the methane sectors, where
2 we don't really know what the baseline is, it's
3 hard to measure the exact emissions from a
4 landfill of methane, but we do know what
5 reductions are achieved.

6 So we might want a system that's not a
7 hard cap but rather a credit-based system, where I
8 can measure how much gas is sucked off that
9 landfill and run through a turbine to produce
10 electricity.

11 So I have a good idea of the credits, I
12 don't have a good idea of the baseline. So we may
13 want different structures here that work together
14 in combination.

15 Also, while we have certainty about the
16 cap we have less certainty about the cost when we
17 do a cap and trade. We aren't as sure, we know
18 we've got to get to a certain level, we aren't as
19 sure what that will cost us.

20 A variation on that is to put a price
21 cap in. It's been discussed a lot around the
22 world. I think the only country that's done it so
23 far is Canada, we haven't done it in the US
24 although we've talked about it a lot.

25 I think it's included in the Mercury

1 trading program that's in the mercury rule
2 proposed by EPA, but again, we haven't really seen
3 a price cap in force anywhere yet to see how well
4 it works.

5 But the idea would be that this is a way
6 to guard against prices above what people think
7 are acceptable while still having a cap.

8 Other options. Pollution fees or taxes,
9 carbon taxes.

10 MR. SMITH: Ned?

11 MR. HELME: I have a question.

12 MR. HELME: Sure, Mike.

13 MR. SMITH: One of the issues that we've
14 talked about and has been discussed with respect
15 to cap and trade is setting the cap, and whether
16 we have the type of comprehensive data or quality
17 data needed to determine a cap for various
18 sectors.

19 And I don't know if this the appropriate
20 place to ask the question, maybe it's more
21 appropriate for the panel later on in the agenda,
22 but can you talk a bit about how the caps were set
23 in Europe and the type of data they used there,
24 and contrast that with where we are now in terms
25 of the type of data we have before us?

1 MR. HELME: Okay, in terms of Europe,
2 interestingly they did not have comprehensive
3 mandatory reporting of data when they set the
4 caps. They're now getting it in this pilot phase
5 with reporting it and so forth, so --.

6 Interestingly, they started, they had
7 pretty good data estimates in terms of
8 electricity, but for a lot of the sectors -- we
9 did some work for the Commission, the European
10 Commission -- it was not really very good data to
11 start.

12 So they basically turned over the
13 question of allocation to each member state. So
14 each country, Portugal, would decide how much
15 their overall reduction target or their ceiling
16 would be applied to the steel industry, how much
17 to cement, how much to refining, etc.

18 And then the Commission was supposed to
19 look at the submissions of the 25 countries and
20 ensure that there wasn't a situation where Germany
21 is giving away the store to the steel industry and
22 the UK is being really tough on them. They wanted
23 to be sure that, since Europe has rules about fair
24 trade, and try to balance that.

25 But it was interesting in the sense that

1 we are now getting the data in this pilot phase in
2 a better sense. And so what happened is,
3 effectively in most sectors, not for every
4 country, Europe set the caps at current levels.

5 They've got a three year pilot phase,
6 then the real program starts in 2008 with the
7 Kyoto Protocol. So we've got a chance to see how
8 this plays and they'll be able to reset the caps
9 for 2008 at that point. So they've done it with
10 kind of a pilot phase approach.

11 But in terms of data here in
12 California -- nationally we've got very good data
13 on electricity, because every power plant, every
14 generating unit, has to report it's CO2 emissions
15 from CEM's, Continuous Emission Monitors, on the
16 stack.

17 So electricity is no problem, we know
18 what the emissions are. The one question for us
19 in terms of the California program is if we're
20 capping out of state power, what's sold to
21 California. That's a little trickier. Not what
22 the emissions are, but which plant is serving
23 California ,how do we deal with that, that's an
24 issue.

25 But for electricity there's no problem,

1 for other sectors it depends. I think, we've
2 found for example in the refining industry it's
3 very hard to get detailed information on
4 individual processes within a refinery, but we do
5 have emissions for California for all the
6 refineries together, so we'd have a number in
7 theory we could set a cap on and operate from.

8 For cement, pretty easy to estimate. I
9 mean, it depends on the sector, but for the most
10 part when you're talking about carbon emissions
11 for the most part you're talking about how much
12 coal, gas and oil is this facility buying.

13 I can have factors, that's what Europe
14 uses, I have factors for oil and gas and for
15 different types of coal. Like western powder
16 river basin coal is higher in terms of its CO2
17 emissions, lignite's higher than say eastern
18 bituminous or Utah bituminous coal, so --.

19 We could se default values, that's what
20 Europe has done, they basically set default values
21 for different coal seams and for different types
22 of gas and oil. Oil and gas are pretty
23 consistent, not a lot of variation.

24 So you can set that, and that's how you
25 derive a number. So it's not like our traditional

1 air pollution, where I have to have little
2 monitors on every stack. I really can do it based
3 on fuel use rewarding, so to the extent that we've
4 got that in California we'll know the answer, I
5 don't know whether the CEC requires that now.

6 But it would be fairly straightforward,
7 I would argue, to collect that data to give you a
8 base starting point for most of the sectors we're
9 talking about.

10 Where it gets tricky is process
11 emissions, that's a little different, you can't do
12 it based on fuel use. But for the bulk of our CO2
13 emissions it's going to be a matter of what you've
14 got in terms of information on industry use, other
15 sector use of oil, gas and coal, and having
16 factors for that.

17 So I think it's doable, I don't think
18 it's beyond the pale at all.

19 Okay, monitoring and reporting, perfect
20 lead-in, Mike, for talking about monitoring and
21 reporting. I think our sense here is that clearly
22 having mandatory reporting a la New Jersey and a
23 la the European Union now is desirable.

24 It's really helpful, and I think New
25 York as well is moving toward mandatory reporting.

1 This is reporting beyond electricity, because we
2 already have mandatory reporting for electricity
3 and CO2 emissions.

4 The advantages here are obvious, it may
5 encourage reductions. We know from the toxic
6 release inventory of a decade ago it really
7 encouraged lots of companies to make voluntary
8 reductions when they saw the numbers printed and
9 published and so on. So I think there's some real
10 value there.

11 And I think there's some real value in
12 terms of both for consumers and for workers within
13 the industries. I mean, your mid-level management
14 starts to pay attention to this, when this is
15 flagged and you have to start reporting your data
16 all of a sudden this becomes important and the
17 high level management looks at it.

18 So there's a bill educational advantage
19 here as well of doing this, and I think the
20 advantages far outweigh the disadvantages in terms
21 of going to mandatory reporting.

22 Obviously, in terms of reductions, you
23 can't count on this for reductions, it's a
24 building block to the larger program.

25 Another option is negotiated agreements.

1 We've seen this more in Europe, although we've
2 also seen it New Jersey with the silver and gold
3 track program.

4 This is where an industry sector, as in
5 the Netherlands example, most of the major
6 industry sectors agreed to energy efficiency
7 benchmarks, where they would to a third party
8 benchmarking process and figure out what the best
9 in the world, top ten percent in the world
10 performance for energy efficiency was, and then
11 use that as a standard that the sector as a whole
12 would meet.

13 And then within the sector, say the
14 chemical industry, they would agree, the parties
15 in the sector, the trade association, how they
16 would divide up that responsibility.

17 So it wasn't, the Netherlands didn't
18 tell each country what to do, they basically said
19 all right, we want this level of efficiency, you
20 guys work together to get there, and if this
21 company can do it a little more cheaply than this
22 one we'll balance it, and as long as you meet the
23 overall target we're happy with it.

24 Another example would be the automakers
25 agreement in Europe, where the same thing has

1 happened. They have this 140 grams per kilometer
2 standard, and they're on track to meet that, and
3 it basically allows the companies to trade off
4 among themselves to ensure that the auto
5 manufacturers as a whole meet the target.

6 And there's always the threat, in the
7 case of Europe, of additional carbon taxes,
8 additional regulation if the companies don't meet
9 it.

10 So far, fairly good success. A big
11 question marks is always are the targets tough
12 enough? If you do it on energy efficiency do you
13 really get the carbon reductions, because I can be
14 efficient and still use fuels that are high in
15 carbon impact.

16 But an interesting opportunity, and
17 certainly something to be thought about here with
18 some of the sectors. Maybe we don't have as good
19 data, maybe this is the place to go with some
20 sectors while we might cap others, we might use
21 technology standards for others.

22 Incentive programs. This is more about
23 the finance side of it. A good example of course
24 is the California renewable reverse auction that
25 uses renewables, where companies bid and their

1 offered an incentive for certain types of
2 renewables.

3 They bid and say I'll give you this many
4 kilowatts at that price and the low bidders win.
5 This is sort of a good model for this kind of
6 thing.

7 As I mentioned at the outset, the
8 Netherlands and the UK have done this from a
9 purchase standpoint, offering money. Now, with
10 the EUTS it's sort of taken over those programs,
11 but in the early years, several years back, they
12 were doing this, the UK was buying reductions from
13 sectors.

14 You might think about this with the ag
15 sector, for example. You know, sectors where you
16 may think politically it's too tough to cap them,
17 it's not viable in terms of the politics, but we
18 know there's some good reductions there, so maybe
19 we make it an incentive program, we offer tax
20 credits or we buy the credits directly and so
21 forth.

22 I think you can see the advantages.
23 Disadvantages, basically, is the free rider
24 problem. Are we paying people to do something
25 they would have done anyway, so we're not really

1 moving the ball forward, and it's always hard to
2 see that.

3 And I think the other thing that's
4 tricky, once you give a sector the idea that it's
5 going to be paid for its reductions, whether it's
6 offsets or direct payments, then it's very hard to
7 get them back in the program.

8 We're seeing this with the developing
9 countries in the Kyoto Protocol. They make
10 reductions, they sell those reductions to Annex
11 One countries, to the CEM's. Now we talk about,
12 well, we'd now like you guys to take a target, and
13 they go well, why should we do that, we're getting
14 paid to do this, why would we want to do this on
15 our own and pay it ourselves.

16 So there's always a tricky piece here in
17 terms of, once you set up a sector and say you're
18 going to be in the incentive pool you get paid for
19 this, it's hard to go back and say well, we need
20 more reductions now so we're going to put the cap
21 on you.

22 And I think looking at the California
23 target, and particularly the 2050 target, it's
24 clear that we'll need effort by all the sectors to
25 begin to go towards those types of targets. So we

1 have to be a little careful of what is promised in
2 the early days in terms of painting yourself into
3 any corner in the future.

4 Voluntary programs. Again, the Bush
5 Administration has championed this, he paid
6 climate leaders. These measures can be very
7 positive, I think you have the -- and I'll talk
8 about the semiconductor industry in a little
9 while, their target is very aggressive, it's quite
10 impressive, and they're doing it on a voluntary
11 basis.

12 So these measures can work. Let me
13 think of some other examples, the effort with
14 American utilities several years back, in the
15 early years of the Bush Administration, didn't
16 really produce much of anything. So it depends on
17 the sector, and it depends on how serious and what
18 kind of reduction you can get agreement on.

19 The tough part, of course, is that you
20 can never be sure you're getting the reduction.
21 If you want to get to the target this doesn't have
22 as much certainty.

23 Education programs. Pretty
24 straightforward.

25 And then finally, the removal of

1 barriers issues. As I mentioned, we've identified
2 a couple of these, I'll come to them later, where
3 there are California rules or standards that block
4 some of the reductions that look pretty cheap in
5 terms of our cost-effectiveness analysis.

6 So there are some things we could do
7 where we just simply remove some existing
8 obstacles and perhaps generate a lot of reductions
9 without doing more than that.

10 Okay, let me take you now to the more
11 indepth work on each sector. And feel free to
12 jump in and ask questions here.

13 These are the sectors we covered. As I
14 mentioned, we're also doing work in power and in
15 petroleum refining, and that work is underway,
16 it's still undergoing work.

17 So let me start with transportation.
18 Not surprisingly, light duty vehicles are 71
19 percent of the inventory in California. So that's
20 the big target.

21 The only other big piece of the pie here
22 is the purple one, and that's aviation fuel and
23 some other diesel. My sense is of that 13 percent
24 most of it is aviation, but it's not all aviation,
25 we don't have a breakdown, this is the CEC

1 inventory for transportation. So you can kind of
2 see where the target for opportunity is.

3 Although interesting, if you see my
4 measure you'll see that freight, even though it's
5 not that big a part of the inventory, it's very
6 fast growing, the fastest growing, and it's pretty
7 promising in terms of opportunities that haven't
8 been captured yet in California and in other
9 states.

10 Here's the big picture for
11 transportation. We're at 190 million tons in 2002
12 based on the work done by CEC and others. We
13 project 310 million tons will be the baseline in
14 2020. That assumes a 1.8 percent annual growth in
15 vehicle miles traveled, and that's, this is 41
16 percent of the overall state inventory.

17 In terms of the reductions, I'll show
18 you in a minute, CCAP has identified -- we
19 basically see 65 million tons in 2020, that's
20 possible. The measures that are in the
21 Governor's list as underway, the Pavley standards,
22 are about 30 million tons.

23 So you can see, this is 2020 again, we
24 basically have a total of 95 million tons. And
25 you can see the growth is about 120 million tons.

1 So the measures we've identified would not bring
2 us back to current levels.

3 So what that says is, transportation,
4 we're going to have a little growth above the 2000
5 level. So to get to 2000 or to get to 1990 we'll
6 have to do more reduction in other sectors, that's
7 kind of the way the picture plays out. Not to say
8 there aren't some other things here in
9 transportation, it's just our first cut.

10 The reductions. We identified three
11 areas, light duty vehicles is about half of it,
12 heavy duty vehicles about a third, and ports and
13 aviation and rail about 14 percent.

14 And this table may be hard to read, I
15 hope you have a printed version in front of you.
16 This lays out the specific measures in the 65
17 million tons -- I think Commissioner Geesman, you
18 asked about this, and this is the breakout here.

19 You can see, ethanol, 85 percent
20 ethanol, about 11 million tons in 2020. Reduction
21 in vehicle miles traveled, the second one is
22 basically smart growth opportunities, it's
23 something that BT&H is working on and a number of
24 the MPO's and COG's around the state are doing
25 this.

1 This estimate is for the five major
2 metropolitan areas in California, not for the
3 whole state. So this is a fairly conservative
4 number. We've been doing some work with the state
5 COG group here in Sacramento, one of the most
6 impressive land use programs in the country, the
7 EPA is working with us to give additional credit
8 to them on their conventional pollutants because
9 of the effectiveness of the land use program
10 underway here.

11 So I think our sense is that this number
12 is conservative, but it's an interesting one. We
13 don't have a price because smart growth is really
14 all about, you know, building more density around
15 transit stations, redesigning street networks, and
16 etc., and it's sort of hard to price that out,
17 those expenses aren't strictly for CO2, they're
18 for other things as well.

19 COMMISSIONER GEESMAN: I not your
20 ethanol example seems to be limited to an E85
21 option?

22 MR. HELME: That's right.

23 COMMISSIONER GEESMAN: You didn't
24 consider any of the lower blends?

25 MR. HELME: We have some numbers on that

1 from the CEC. We didn't present them here but we
2 do have some other, there's some other options,
3 you're right.

4 Now in terms of freight we're looking at
5 hybrids and so forth on the freight side, and
6 biodiesel and synthetic diesel alternatives, a
7 fairly good sized number there, 34 million tons.

8 And then ports, air and rail, these are
9 modifications to aircraft and ground equipment.
10 This I think is just on flights originating in
11 California. Freight rail is of course shifting
12 from truck to rail, port electrification and so
13 forth.

14 Next steps of the analysis, I've noted
15 that others have looked at a more advanced Pavley,
16 beyond the 2016 number. We didn't do that, but
17 that certainly would be something that would
18 probably generate additional reductions.

19 We're also going back to make sure that
20 the counting for a number of these measures don't
21 double count with Pavley, if you've already taken
22 a credit for cars reducing emissions because of
23 the tailpipe standard then you've got to be
24 careful if you're taking credits for some of the
25 other things like alternate fuels and so on.

1 We're also looking at the air quality
2 implications. Biodiesel looks interesting, but
3 there are questions about it's impact on VOC's and
4 some of the other air issues there.

5 In terms of the policy approaches,
6 basically we're looking at complementing standards
7 with incentives, balancing short- and long-term
8 strategies, looking at bottom up approaches.

9 In terms of the policy approaches that
10 are recommended, obviously mandatory reductions is
11 one way to go, and you could do this in terms of
12 the fuel blends. We've seen this, Minnesota has
13 done it, New York is on the verge of doing it, in
14 terms of the biodiesel side of the equation.

15 There are ways to do more with
16 incentives, feebates, that sort of thing.

17 Better planning practices, this goes to
18 the smart growth side of things. That looks quite
19 promising, the numbers are a little hard to
20 estimate but a good opportunity there and
21 certainly something as I mentioned that BT&H is
22 interested in already.

23 And then trying to prioritize policies
24 that have multiple benefits. So a mixture of
25 strategies here, building on the basic

1 centerpiece, which is the Pavley program.

2 Let me turn to forest and agriculture,
3 carbon sequestration. Presently, as of 1999, the
4 estimate is about 19 million ton net benefit to
5 the state of forestry activity. So we got about
6 half of that from carbon sequestration forest and
7 soils, and about half of it from storage of wood
8 products and landfill waste.

9 So it offsets about four percent of the
10 emissions. Projections are that you'll see that
11 that could increase with some incentive programs
12 to move it along.

13 We looked at a variety of options, there
14 are the options we looked at in terms of carbon
15 sequestration in this area. The green ones are
16 sort of the green light, the red ones are red
17 light, the yellow ones are sort of in-between.

18 Afforestation, which is re-planting
19 lands which don't have forestry today, three and a
20 half million tons a year over 80 years, pretty
21 cheap opportunity.

22 Thinning forests, again about 3.7
23 million tons a year into the future.

24 The third one's a little unusual, this
25 is the idea of after you thin the forest you take

1 the slash and you take the cut down trees and you
2 bury them, and that sequesters the carbon
3 permanently. Not in a traditional landfill but in
4 a special landfill done for this.

5 The state of Wisconsin has looked at
6 this as an option with putting these under the
7 Great Lakes, putting them in Lake Superior as a
8 way to permanently sequester the carbon from this
9 sort of thing.

10 It's unusual, it's not all that cheap,
11 but it's an interesting idea in terms of if you're
12 really moving down the supply curve and looking
13 for options that are -- this is of course above
14 \$20 a ton.

15 Other kinds of things, converting
16 hardwood forests to conifer forests. The conifers
17 grow faster, so you have more sequestration.

18 Extending rotation, so instead of
19 cutting the trees on a 10 or 20 year cycle you cut
20 them on a 30 year cycle. You see I have that one
21 in red in terms of levelized cost. That's because
22 obviously cutting slower means you get less
23 production, you don't maximize production, so this
24 clearly has a cost for the forest companies that
25 are managing the forests, so it's pretty

1 expensive, basically.

2 Reducing forest loss and so forth.

3 The final one, reducing no-till
4 agriculture. This is a big one in the Midwest.
5 Our consultant felt it was worth 3.8 million tons
6 a year for 15 years, although I think his sense
7 was that this is less attractive in California
8 than it would be in a state with lots of soybeans
9 and corn and that sort of thing.

10 Generally speaking with lower value
11 crops, like corn and soybeans, this becomes
12 attractive in terms of its relative percentage add
13 on to your profit. For a farmer here with cotton
14 or with some other things it's not very much money
15 and you've got to redesign, buy new equipment and
16 so on, so it may not be as attractive in a
17 California context as it would be in say Kansas.
18 Nonetheless we think there's some opportunity
19 there.

20 COMMISSIONER BOYD: Ned, before you go
21 on, I think most of the people in the room, I
22 recognize them from yesterday, we spent the entire
23 day in this room yesterday with the CEC's Climate
24 Advisory Committee going over a lot of this
25 information.

1 And I think one of the items, not that
2 they all didn't generate a lot of discussion, good
3 discussion, I think the one that generated quite a
4 bit of discussion was a little bit of a shock to
5 some of us was the thin to reduce fire, which you
6 had listed in red.

7 We had quite a lengthy discussion of
8 that yesterday, and I'm not sure there's universal
9 agreement in California that that's as much a
10 negative as appeared on the surface.

11 But I would say the findings of your
12 consultant and the debate we had yesterday will
13 certainly generate a lot of additional review in
14 looking at this, because some of us for years have
15 seen a lot of positive attributes to this fire
16 reduction and contribution to biomass supplies and
17 conversion of those supplies to energy in some
18 form or another.

19 But I thought I should just note that
20 since it is of such an interest here in California
21 and particularly now that we've just started up a
22 new bio-energy task force in the state to try to
23 mien the biomass potential in the state to
24 positive things.

25 MR. HELME: Yeah, there's quite a debate

1 here, as you noted Commissioner, about -- to do
2 this Arkansas feels you've got to take out a lot
3 of trees, you've got to make pretty good gaps
4 between the trees, and basically you're in effect
5 taking away some of the productive value of the
6 land in the sense of the forrest.

7 So his view was that the cost was a net
8 negative both from an emissions standpoint and
9 from a cost standpoint. Now I know that one of
10 the California experts, Robert Heald, had a
11 different view, and they had a healthy debate.

12 Apparently there isn't a lot of research
13 done on either side of this, so it perhaps remains
14 to be seen where we're --

15 COMMISSIONER BOYD: Also, in California
16 you don't get near big trees with your chainsaw
17 for thinning purposes without paying a heavy
18 price.

19 MR. HELME: Okay, in terms of measures,
20 in summary we think there's an additional 12 and a
21 half million tons in 2010 and another 18 million
22 tons in 2020 from a combination of these forest
23 measures.

24 Obviously if you thought the price curve
25 was higher -- there's more than what's identified

1 here, he was trying to keep this at a relatively
2 moderate cost per not prices, and there are some
3 questions about some situations where you might,
4 you know, difficulty getting to the sites, that
5 sort of thing, so you have to be careful of your
6 estimate, so we tried to be a bit conservative
7 with our numbers here.

8 In terms of approaches, our consultant
9 suggested that you could do this through
10 technology, and California has a history of
11 technological requirements in the forest sector,
12 so it could be possible in that way.

13 We also talked about a cap and trade
14 sort of approach, a little difficult, you'd
15 probably want to after just the largest
16 landowners, and I'll show you some numbers here on
17 number of large landowners. And obviously
18 politically it may be quite difficult to put a cap
19 on the forest sector, it may be easier to do it
20 via offsets or credits for reductions that way.

21 And that's kind of where we came down.
22 The suggestion was that perhaps offsets is the
23 best way to go, and one of the key questions here
24 that I alluded to earlier about when you make a
25 sector a source of offsets are you giving them a

1 pass, are you letting them out of the program and
2 then you can't get them back in later.

3 One way to sort of bridge that is to
4 sort of share the credit, so let's say I'm
5 planting trees and I would capture 100 tons. Well
6 maybe the policy would say well 50 tons of that
7 goes to the atmosphere, goes to the California
8 state program to reduce emissions and 50 tons are
9 sold into the marketplace.

10 So we could sort of split in some form
11 the share that gets paid for and the share that
12 gets contributed to the atmosphere, to the
13 California state program. It's a way to basically
14 have everybody give at the office and also receive
15 some incentive payments.

16 Of course it makes it less attractive
17 because you're getting less incentives, but if the
18 numbers are right it's a pretty attractive set of
19 opportunities, that may well be a way to sort of
20 bridge the concern that we want to get some tons
21 that help us get to the California target and we
22 also want to get some incentives and offsets that
23 help others meet their target, like the utility
24 industry or somebody else who has targets to meet.

25 Here's the numbers on, just to give you

1 a sense of the picture, if we wanted to cap forest
2 owners. Basically 1,000 acres is sort of a
3 minimum ownership, most people think, to be
4 viable. Anybody smaller than that it's really a
5 nuisance for them to deal with.

6 In California there's about 1,000
7 owners, about five million acres, 38 percent of
8 the state's acreage. So with 1,000 players you
9 could bring those folks into the program if you
10 wanted them in a cap and trade program, but again
11 I talked about the politics of this and it's a
12 little tricky.

13 In terms of the ag program, similar
14 question, where do we want to go with this. Cap
15 and trade for no-till clearly would have lots of
16 political problems. Clearly again, a voluntary
17 project base sequestration can work just like
18 forestry, you could do the same thing here.

19 You could have farmers who do no till,
20 some portion of it is contributed to the
21 atmosphere, and some portion of it is paid for.
22 Although, as I noted, because it's not as
23 economically attractive here as it is in Kansas or
24 the Midwest probably you'd need to give most of
25 the credits here, because at some point it becomes

1 so little that nobody wants to join and play in
2 the program.

3 Landfills, a quick look at this. You
4 noted in the early slide, landfills were a big
5 opportunity under the \$20 a ton range. We're
6 basically seeing big increase in emissions from
7 landfills and we're also seeing significant
8 opportunities for reductions.

9 Bottom line here is that taking the
10 growth minus the reductions is basically a slight
11 increase in emissions on net, but promising, worth
12 pursuing, not very expensive.

13 So in terms of policy, again this is a
14 good example of where cap and trade might not work
15 as well, because again we don't really know what
16 the total emissions are, about 25 percent of the
17 methane escapes, we don't know about that.

18 So setting a baseline is pretty
19 difficult for this sector, but keeping track of
20 what reductions they achieve is not, so if I
21 capture the methane and I run it through a turbine
22 I know exactly how much methane I've captured, so
23 it's easy to quantify the credits, not so easy to
24 quantify the baseline.

25 So this would be one where you could

1 link this program to a cap and trade program, but
2 you probably wouldn't want these guys in the cap
3 and trade per se because of the difficulties.

4 Manure management, again a nice
5 opportunity. Dairy digesters, you cover the
6 lagoons and you capture the methane from the
7 manure in the process, and very attractive in
8 terms of the numbers.

9 We had some earlier testimony by Cynthia
10 and her folks that this was kind of attractive but
11 they were stymied by the fact that net metering is
12 not a policy now, so it's hard to sell the
13 electricity generated back to the grid at
14 competitive rates.

15 But you can see the prices here in terms
16 of the opportunity, a fairly substantial number of
17 tons under \$20 a ton.

18 In terms of how you might approach this,
19 you could do mandatory control, you could do a
20 technology standard. There are some questions
21 about the NOX emissions associated with these
22 biodigester, particularly here in the Valley where
23 we have a big non-attainment problems.

24 There's a question about whether or not
25 you could, as Sweden does, bring the waste all

1 together in a bigger site and there have economies
2 of scale so you can put SCR and other technologies
3 on, but certainly a question mark that we'd need
4 to assess before we decide any policy or what's
5 the implication for the clean air side of the
6 house here.

7 A cap could probably be done, but again
8 difficulties in the baseline. Incentives is
9 probably an easier approach to take, and this is
10 one of these cases where you could call this
11 barrier removal, I think Ralph raised the point
12 that he didn't think net metering was a barrier,
13 it's a policy, and it's a policy decision to give
14 incentives to this, and I think that's a fair
15 point.

16 But basically, to make this happen we'd
17 need to do something on net metering and solve
18 some of the questions about the NOX emissions from
19 the digesters.

20 Semiconductor. I mentioned this is a
21 very positive story. This is one with a voluntary
22 agreement, and we've seen significant increase in
23 emissions but also big reductions. The industry
24 is committed to ten percent below 1995 levels for
25 the country as a whole and that would put

1 California well below the California reductions
2 that would meet that target.

3 So, very attractive, underway, likely to
4 happen. We can almost count this one I would say.
5 You could put it in a cap and so on, I don't know
6 that you'd need to, this one is well underway and
7 moving aggressively.

8 Let me turn finally to the two sectors
9 where we haven't concluded our work, and I think
10 particularly to the CEC these are very interesting
11 because they're really in the main part of your
12 work.

13 First area is the power sector. As I
14 noted at the start, we're talking about almost 100
15 million tons, 95 million tons a year, counting the
16 imports as well as the power within the state in
17 the inventory.

18 We're working on the reference case,
19 but we think emissions will be rising,
20 particularly from the imports, from coal-fired
21 power outside of California coming in to
22 California in the absence of any policy.

23 What we're going to do with this
24 analysis, we're going to use the NIMS model, is to
25 look at what the costs of various options are. So

1 we would look at energy efficiency, we'd look at
2 this advanced RPS, the accelerated RPS, and then
3 we'd look at the various levels of cap for this
4 sector.

5 And we can look at these in isolation or
6 in combination with each other, so we'd run first
7 efficiency and then RPS and then a combination
8 with caps and so on, get a sense of what the costs
9 are --.

10 And also get, I think the sense of the
11 Advisory Committee was that it's not useful to
12 think about a cap just on California generation.
13 We really need to look at a cap on the load-
14 serving entity. So a cap on Southern California
15 for all the power they sell to their customers,
16 whether it's power bought from New Mexico or power
17 generated in California.

18 So we'd set a cap on the carbon content
19 of the electricity they are selling to their
20 customers, we'd do the same for all the
21 distributors, and also for the public power
22 entities.

23 The model will allow us to look at the
24 transmission links between California and other
25 states. It will also allow us -- we've basically

1 rebuilt this model, so that we can look at it as
2 if it had two markets.

3 Because in effect what you're going to
4 have is a cap on those serving California with a
5 carbon constraint, and then you'll have the rest
6 of the WECC, where there is no carbon constraint,
7 at least at this point, which will have a
8 different price picture.

9 So we're going to basically set up the
10 model so we can run those two markets and see what
11 happens. What does the model predict in terms of
12 what will be sold to California, what will those
13 costs look like, what will the net emissions look
14 like.

15 So we'll get a sense of what you can
16 hope for from different levels of cap and from
17 different things like the RPS and so on moving
18 forward.

19 Our timing is, we've been working a lot
20 with the work group of the Advisory Committee.
21 We're having a meeting tomorrow to sort of hash
22 out the final shot on the assumptions that go into
23 this NIMS model.

24 We've done a lot of work to tailor this
25 to California situations to be sure this really

1 reflects the reality on the ground in terms of
2 California electricity sector, but I think it will
3 produce some pretty exciting results in terms of
4 really giving us a sense of what's possible in
5 this sector.

6 You notice, at the beginning I said we
7 had a good chance of making these targets without
8 it, but obviously the power sector -- from
9 experience I'll say these are going to be in the
10 \$20 per ton or less range, depending on how hard
11 the cap is, so these will be pretty attractive
12 reductions is my supposition as we go forwards.

13 So this will be a pretty important piece
14 of the analysis in thinking about do you trade off
15 controls on digesters, incentives for cement, what
16 have you versus additional caps and so on on the
17 power sector. So that's kind of where we stand on
18 the power work.

19 I'd be happy to respond to questions if
20 you have any on the modeling there.

21 And then the other sector that's
22 important is the petroleum sector. We had a
23 lengthy discussion yesterday. We've had some
24 tough times with the petroleum sector in terms of
25 the data, we do have good data on overall

1 emissions from refineries in California, we don't
2 have data on individual processes within the
3 refineries and don't have any data on the costs at
4 this point.

5 So we had a tough time estimating what's
6 a cost-effective strategy, so we're suggesting
7 that some mandatory reporting would be helpful,
8 and we're looking forward to working with WSPA and
9 BP and a number of the companies, Chevron here in
10 California, to think through strategies for this
11 sector.

12 I'll just review a couple of the
13 strategies that we've talked about. Technology
14 based would be one way to go, you could also go
15 with the cap as I mentioned, and we could also go
16 with benchmarks, you know, a certain amount of
17 carbon per barrel of aviation fuel or per barrel
18 of petroleum coke, that sort of thing would be
19 another way of going at this sort of question.

20 As I mentioned, a lack of data in this
21 area. I would note that one other alternative
22 here would be simply to say all right, we know
23 we've got 35 million tons from this sector. We'd
24 simply set a cap at 35 million tons in the future
25 and say all right, we'll set a price cap.

1 We'll say that we won't require the
2 sector to do more than \$20 a ton if that's what we
3 see as our core price for the other options here
4 in the package. And if they reach \$20 a ton
5 they'd stop meeting the cap and they'd simply pay
6 the amount that's required.

7 It's been proposed in other areas. It'd
8 be a way to get around the problems with the data
9 and the difficult of, I think this came up in the
10 discussion yesterday -- well, we know how much
11 emissions why couldn't we simply cap? You could.

12 It would make the program a little more
13 complicated, but it could be done in a way that
14 would protect against really high costs. Since we
15 don't know what the costs are we don't want them
16 unlimited because it could end up being \$100 a ton
17 and not be very attractive. So this would be a
18 way to handle this sector as well.

19 COMMISSIONER BOYD: Ned, reflecting on
20 our discussion of this area yesterday and your
21 point up there about voluntary reporting being
22 very limited, I guess what we identified
23 yesterday, that there's really only one California
24 petroleum company, and it's really a worldwide
25 company, BP, that is a member of the registry and

1 does voluntarily report.

2 Of course, as contrasted with utilities,
3 who pretty universally belong to California
4 registry. That has proven to be a problem. I was
5 startled and delighted to see a two page
6 advertisement, I guess I'll call it, in today's
7 newspaper, a letter from the Chairman of Chevron
8 indicating an extreme interest in the subject of
9 the future of petroleum and alternative fuels and
10 this, that, and the other.

11 Maybe they're an easy candidate now to
12 recruit into the registry for you registry folks
13 out there. In any event, an interesting
14 coincidence of timing.

15 MR. HELME: And it's interesting, I
16 should note, back to Mike Smith's question
17 earlier, the petroleum sector is regulated as part
18 of the European system. They were given
19 allocations by each country of caps. So hopefully
20 there may be some useful data there that could
21 help us in thinking about this.

22 But in the case of Europe they didn't
23 have any cost estimates either, and they simply
24 set the cap and let the chips fall.

25 COMMISSIONER GEESMAN: And has that

1 European approach been a process driven approach,
2 or a refinery by refinery --?

3 MR. HELME: Refinery as a whole, tons
4 from the refinery as a whole, didn't go to the
5 process by process step.

6 Okay, I'll skip over this, the other
7 point on refineries, clearly the other issue is
8 biodiesel. There are some barriers today to
9 refineries doing biodiesel. Obviously if the
10 federal tax credits only go to farmers, they don't
11 go to refineries, there's no incentive for them.

12 There might be ways to make this
13 attractive. So in terms of thinking about this
14 cap, the alternative fuels piece is also a part of
15 it to the extent that if the refinery operations
16 here were to get into biodiesel obviously that
17 would reduce their CO2 emissions.

18 That would be another option beyond
19 energy efficiency and some of the other things
20 that might be available as ways to reduce their
21 emissions.

22 Let me skip over -- I've got some stuff
23 here on cement, basically pretty straightforward,
24 suggesting that this is a sector that could be
25 capped fairly easily, the tons are pretty obvious.

1 Also might be a good opportunity for a
2 negotiated agreement. I had discussion with a
3 cement representative last night after the meeting
4 and he said well, we might be willing to do
5 something on this area.

6 So I think there's some other ways to
7 get there, but this one's a little simpler than
8 most. You can see what the options are and what
9 tons. It's a couple million tons per year
10 opportunity.

11 And then let me skip down through -- I
12 also have some stuff here from natural gas. The
13 opportunity here is from looking at leaks from the
14 gas system. The numbers that ICF put together,
15 pretty attractive numbers.

16 Not very big reductions, less than a
17 million tons. California has a lower leak rate
18 than most states, so I'm not as big an option as
19 others. Again, a good opportunity for a credit-
20 based approach rather than a hard cap.

21 So let me go to conclusions and wrap
22 this up. Our sense again is that you need
23 reductions from a whole set of sectors. There's
24 no silver bullet, there's no one obvious measure
25 that gets you a big part of the way there, you

1 need to build it piece by piece.

2 Our sense of the numbers is that the
3 estimate that CCAP and ICF put together, we could
4 do our part of the reduction to get to the 2010
5 target for less than \$20 a ton. It's less clear
6 for the 2020 target because the cost estimates are
7 a little higher and a little less certain.

8 I think one very important point though
9 for you all in the IEPR is to think about this in
10 terms of our historic experience with new
11 technology. We're clearly going to need
12 technological innovation, and the experience we've
13 had with NOX and SOX and with renewables in
14 Germany and so on has been that once countries or
15 states step in and set targets, we do begin to see
16 the innovations.

17 We've seen dramatic, a factor of two
18 reductions in costs for NOX and SOX controls, the
19 same way for wind power in Germany. So I think
20 when we think about costs here we need to be a
21 little careful.

22 In the 2020 time frame, once we really
23 move, once the state really moves towards this
24 first phased target you're going to set off a real
25 interest in new technology and in ways to cut

1 these costs. I think we'll see a much more
2 attractive set of costs in that 2020 time frame
3 then in perhaps we see today, just looking at the
4 technology we know is out there today.

5 So I think that's a very important
6 caveat to think about as we design this.

7 And then finally, as I mentioned
8 earlier, there are some technical policy barriers
9 that could be removed that would make some of
10 these things much easier to achieve, it wouldn't
11 require much more than removing the barriers.

12 Finally, in terms of meeting the target,
13 obviously broad-based participation and use of
14 mandatory approaches where it's appropriate can
15 really help you to be sure you'll get to the
16 target.

17 And as I said, it's a matter of fitting
18 the tool to the particular sector. So you're
19 going to want different approaches for different
20 sectors. And as I said before, no silver bullet,
21 I think we're talking about tailored approaches to
22 a number of these.

23 So let me stop there, and I'd be glad to
24 take any questions you all might have.

25 COMMISSIONER GEESMAN: I think we'll

1 just absorb it, Ned.

2 MR. HELME: Okay.

3 COMMISSIONER GEESMAN: Thank you very
4 much.

5 MR. HELME: Thank you.

6 COMMISSIONER GEESMAN: I guess I should
7 offer to anybody in the audience any questions of
8 Ned? Alan?

9 MR. LLOYD: The one comment I would say,
10 Ned, and I guess not unexpected maybe, Jim and I
11 may look at this, but I think it's difficult to,
12 when you talk about bringing costs down from
13 incentive programs, typically -- at least my
14 experience on the mandatory side -- that costs
15 typically tend to be overestimated.

16 But then when in fact they come into
17 play they're significantly lower. So again I
18 think that's probably a more general comment, not
19 just for the voluntary side, the incentive based
20 side, but also I think on the other side of the
21 thing too, but your comment was a good one.

22 MR. HELME: I agree completely, with
23 every mandatory program we can think of that's
24 been the case.

25 MR. LLOYD: Yeah, and also, as you say,

1 looking ahead, we shouldn't assume that those are
2 going to be the costs, because typically, as you
3 say, competition, whether it's through an
4 incentive program, trading program or a mandatory
5 program they always tend to seem to go down.

6 MR. HELME: And I'd note, Nancy Skinner
7 raised this yesterday and we had a little
8 discussion, on the transportation side in
9 particular, you don't do transportation measures
10 just for CO2.

11 So if you assess them as if CO2 is the
12 only thing, the costs tend to be much higher. If
13 you think about smart growth, you've got better
14 mobility, you've got better livability, other
15 factors, transportation reasons, you do things,
16 and when we do the costing here and we say oh,
17 it's dollars per ton, it looks a lot higher than
18 perhaps it should be, in terms of that.

19 It's difficult. For the purposes of
20 analysis you want them to be apples and apples so
21 you don't sort of look at the co-benefits in any
22 sector, you just say every one of these is CO2.

23 But in the transportation context
24 there's a lot more co-benefits, a lot of other
25 reasons you do the measure than there is say, in

1 cement for example.

2 MR. LLOYD: Agreed.

3 COMMISSIONER GEESMAN: Andrew? You need
4 to come up to the microphone. It should have a
5 green light on it. Introduce yourself.

6 MR. HOERNER: This is Andrew Hoerner
7 from Redefining Progress. Ned, it seemed to me
8 that you were talking about the caps as if the
9 caps were kind of sector by sector caps, and I
10 wonder if you've considered at all the potential
11 for cost advantages by allowing inter-sectoral
12 trading of a more comprehensive cap system that
13 would cover multiple sectors?

14 MR. HELME: Yes, I mean, and I zipped
15 over that slide, but certainly an upstream system
16 that covered the entire California economy would
17 be one significant alternative, where you simply
18 had credits, allowances held by oil refiners,
19 natural gas distributors, coal brokers, etc., as a
20 way to do it.

21 We've done a number of papers on this.
22 We actually recommended it at one point to the
23 European Union when we were consultants to them on
24 the design of their system.

25 Tends to be hard politically, but it's

1 very attractive from an economic standpoint. You
2 maximize, the bigger the number of players in the
3 market the lower the marginal costs. So it's
4 always an advantage.

5 And I didn't say much about the
6 advantage as well of thinking about buying credits
7 from outside California as well. So we've got
8 discussions, this RGGI system in the Northeast, if
9 that comes to fruition, trading with the RGGI
10 system could be attractive.

11 Certainly our CDM and our international
12 Kyoto market will have verified credits out there
13 in the marketplace, and you could see a place
14 where a California system would allow trading with
15 those markets since those would be certified
16 credits.

17 So, yeah, I'd agree. We did look at
18 that. I think it has some real attraction. We
19 also felt, as we got in to the bottom up, that
20 we're looking at sector by sector, and talking
21 about linking these sectors.

22 So my point was, if you capped several
23 sectors and then you had others where you get
24 offsets you could link it up. So I think the
25 ideal system is to get it as broad as you can,

1 bring in as many sectors as you can into the
2 system.

3 COMMISSIONER GEESMAN: Come on up, Don.

4 MR. SMITH: Don Smith, CPUC. I want to
5 agree with what was just said. That was one of
6 the two things that I wanted to ask. Because if
7 your goal is maximize greenhouse gas reduction at
8 lowest cost it doesn't make logical sense to do it
9 sector by sector in that it might be much less
10 expensive to reduce GHG in one sector than
11 another.

12 And a related question or comment,
13 regarding inter-sector trading or how to do it.
14 I, you didn't mention, or I missed it, the
15 possibility of having some sort of carbon dioxide
16 tax, or greenhouse gas tax, which would be the,
17 have the equivalent effect of a cap and trade, and
18 I think would actually be simpler in the long run,
19 and could be made revenue neutral, either within
20 an industry or regarding the government as a
21 whole, but using that money to go into the general
22 fund.

23 But anyway, I just wondered why you
24 didn't mention the carbon tax policy.

25 MR. HELME: I passed over that, maybe

1 you missed it, pollution fees as one of the
2 options. But I agree.

3 A good example of this, the Dutch
4 system. Where they're a part of the EU trading
5 system, so they've got six major industrial
6 sectors plus electricity in the trading system.

7 And then they have a carbon tax on
8 residential, commercial, domestic basically energy
9 use. So they send a price signal to those folks
10 at the same time that they regulate the major
11 sectors of the cap and trade.

12 So you can have an integrated system
13 that includes a tax on -- because I noticed, here
14 I didn't really say anything about options in the
15 residential commercial sector, and it's pretty
16 good size, 40 million tons in California.

17 So that might be a way to link the
18 programs, it certainly can. My point was to say
19 you could have a mixture of options and fit them
20 together. But your point's very well taken.

21 MR. JONES: Russell Jones, the American
22 Petroleum Institute. I have a technical question.
23 On the E85 assumptions, on the reductions for
24 light duty vehicles for E85 as the largest in that
25 category.

1 Was that, is it assumed that ethanol
2 would be growing in California, or growing
3 somewhere else, and if it's growing somewhere else
4 is that treated like electricity that's imported?

5 MR. HELME: I'm sorry, my transportation
6 guy's not here today, and I can't give you an
7 answer. So I'll get back to you, for the record,
8 but I don't know the answer.

9 COMMISSIONER GEESMAN: Please make sure
10 that your response to him goes into our docket as
11 well.

12 MR. HELME: I'll do that.

13 COMMISSIONER GEESMAN: Thanks. Other
14 questions for Ned? Thank you very much.

15 MR. HELME: Thank you.

16 COMMISSIONER GEESMAN: Okay, we've got a
17 panel next on our agenda. Will the members of the
18 first panel please come up and take your seats
19 around the table?

20 Is Abby Young here?

21 MR. DUVAIR: She is, she'll be right in.
22 I think she's dealing with some logistics for her
23 young one.

24 Good morning, my name is Pierre duVair,
25 I've worked in the Climate Change Program at the

1 California Energy Commission, and I'm going to
2 help introduce this very distinguished panel we
3 have this morning.

4 I would first like to mention that the
5 primary focus for this panel is going to be to
6 provide some climate policy context for the
7 Committee, and so we've got some speakers that are
8 going to speak to the international climate policy
9 context as well as the national, state, and
10 regional context, and then the local climate
11 policy context.

12 And with that, why don't we go ahead and
13 just launch with our first speaker. Our first
14 speaker is James Reilly. James is a Senior
15 Adviser on energy and environment with the British
16 Embassy in Washington D.C. We're very privileged
17 to have Jim come out and join us here.

18 And Jim, he works with the Global Issues
19 Group at the British Embassy. He works on the US
20 and UK policies and partnerships in the energy and
21 environmental arena, which is a very hot topic
22 right now after the G8 summary at Glen Eagles in
23 Scotland.

24 And Jim has previously served as a
25 legislative adviser for Senator Tom Carper from

1 Delaware. He's got a Masters Degree from Duke
2 University in Coastal Environmental Management, so
3 he brings a lot of expertise to us.

4 So Jim, if your microphone is working,
5 you can either come up and -- if you come up and
6 run the slides from here that's probably the
7 easiest.

8 And I see Abby's joining us, so we've
9 got a full panel.

10 MR. REILLY: Well, thank you, Peter,
11 thanks for the introduction. And Commissioners
12 and Mr. Secretary, thank you for having us here
13 today.

14 I'm going to give a quick overview, and
15 I'll try and keep this short, of what's happening
16 in the United Kingdom on climate strategies and
17 some of the programs that are underway there, a
18 little bit about what's happening in the broader
19 European Union.

20 I'd like to wrap up with some of the
21 outcomes from last week's G8 summit in Scotland,
22 and lay a little bit of what might be happening in
23 some other international efforts.

24 Just broadly, the headlines, why is the
25 UK where it is on our climate policy? From the

1 top down, from number 10 and throughout
2 Parliament, there's three things to think of.

3 One, folks understand that this is
4 necessary. As a country we recognize that the
5 planet is warming and that human activity is
6 contributing.

7 Secondly, we believe it is achievable to
8 act. Looking at a portfolio of measures,
9 including renewable energy, emissions trading
10 programs, which I'll talk a little bit about,
11 aggressive and we believe effective energy
12 efficiency program, and also being mindful of the
13 need for fuel diversity, which I'll also talk
14 about.

15 But lastly, because we are starting to
16 actually see results and being able to measure our
17 program, we can talk about the cost, which is one
18 of the big hurdles that we face. And we find that
19 this is affordable.

20 Between 1990 and 2005 UK emissions,
21 greenhouse gas emissions, were down 12 percent,
22 while the national GDP was up 35 percent. And
23 another important headline, as we look towards our
24 UK ambition of a 60 percent GHG reduction by 2050,
25 the modeling shows that will cost us less than a

1 six month delay in GDP growth, or about .2 percent
2 over that time period.

3 So, a little bit about why it's
4 necessary. I think many of you have seen this
5 chart, but this is our, from our Hadley Center,
6 which is one of our scientific centers of
7 excellence in the UK, looking at actual near
8 surface temperatures, 1861 to 2003. This is some
9 of what underlies the belief that this is
10 necessary.

11 When you look at the UK, over the years
12 of 1997 to 2001, we saw over three an a half
13 billion dollars in costs due to particularly hot
14 summers. And we're not going to talk about
15 specific events, but we are paying attention to
16 some of the trends of a changing climate.

17 Ensured flood damage in one particularly
18 we year, 2001, \$750 billion. And when you look at
19 an island like the United Kingdom and you see 80
20 centimeters sea level rise predicted between now
21 and 2080, a lot more rain in the winter and less
22 rain in the summer, and we don't have a lot of
23 places to move to on United Kingdom property we
24 are concerned.

25 You may have heard a little bit about

1 the barrier on the Thames River, which was built
2 originally with the expectation it would be used
3 two, maybe three times a year to help control
4 flooding on this river. And back in the 80's
5 that's about what was happening, once or twice a
6 year.

7 The last couple of years, if you look at
8 the end of the chart, in fact in 2001 it was used
9 24 times, and in 2003 it was used 20 times. So we
10 are seeing a more frequent use of the barrier,
11 which is, according to some of the scientists,
12 associated with an increase in sea level.

13 Just one flood, if a flood was to break
14 through the barrier, would, the damage to London
15 and the businesses there would be on the order of
16 7 billion pounds.

17 We also look at the energy question.
18 This is not just a climate question for us.
19 Again, as an island we are very mindful of where's
20 our energy supply today and where is it going to
21 be tomorrow.

22 And right now we are in transition. We
23 are moving from a net exporter of energy to a net
24 importer and we have just switched on oil, and are
25 now importing more oil than we use.

1 We're importing more than 50 percent of
2 our oil, and we're about to do the same on gas.

3 So then the question becomes we know
4 that this is a problem, can we get there. And in
5 2001 through 2002 the Administration conducted a
6 review and produced an energy white paper which
7 laid out what are some of the steps we can take to
8 get to a sustainable climate policy.

9 And some of the pieces that they were
10 directed to consider were what were the questions
11 on security, how would this impact our energy
12 supplies? What was the impact on environment?

13 What should the targets be? How would
14 this affect our economic competitiveness, not only
15 among sectors within the country but as we look at
16 the EU and as we look at the global markets. How
17 would we be impacted as we adopted a climate
18 policy?

19 And what would the impacts be on the
20 people of the country?

21 One of the recommendations that came out
22 of that was to look at this in a couple of
23 sectors. If we were going to try and achieve a
24 reduction of carbon, say 25 million tons by 2020,
25 how could we break that out?

1 And the thinking today is that we would
2 do it through a number of programs, no one silver
3 bullet, as Ned has said, is going to do this.

4 Looking at energy efficiency in homes
5 and households throughout the country is one of
6 the major ones, energy efficiency in industry and
7 the public sector is equally important.

8 Transport, we do have some opportunity
9 there. It's not as significant as in the energy
10 efficiency sector.

11 Increased use of renewables, which we'll
12 talk to a little bit later, and emissions trading
13 which, I always find is a small contributor here,
14 but it does get an awful lot of attention.

15 One of the questions is, again, we are
16 an island, where is our energy coming from? This
17 is the base case going forward, where is our
18 electricity fuel coming from?

19 And as you see, you hear the term "the
20 dash to gas" in the UK, the large and growing
21 purple sector there is our increased use of
22 natural gas for electricity starting to approach
23 upwards of 50 percent in the next three decades.

24 CHP and biomass are starting to grow, if
25 you look at the top there, and coal is starting to

1 decline. And also note that nuclear, which today
2 is about 20 percent of UK electricity, is
3 scheduled to phase out.

4 So one of the questions that the
5 countries haven't asked, if this isn't going to
6 help us with our carbon targets what are some of
7 the options that might? And you see a
8 significantly different mixture of fuel going
9 forward.

10 This is not, just to be clear, this is
11 not an agreed path forward, but this is just an
12 example. One of the debates that is starting to
13 come on the scene is what to do with natural gas,
14 could we do different things with coal, what roles
15 will the various forms of renewables take down the
16 road?

17 So then the question is what's this
18 going to cost? And again, looking at, as I said,
19 our emissions are down about 12 and a half percent
20 since 1990, and while the economy has continued to
21 grow. The green line is our Kyoto target
22 greenhouse gases, and we do expect to meet that.

23 We will continue to work hard, and need
24 to work hard, to meet that target. But we will
25 meet our Kyoto targets.

1 And I think I covered this in the
2 introduction, but the point is that this is not
3 going to wreck the UK economy. And we're on the
4 order of one-half to two percent of GDP by 2050
5 would be the cost. And by planning well ahead we
6 can build that down.

7 So then the question becomes how do we
8 go forward, because we can't do this alone. And
9 2005 is, in many ways, a remarkable year for the
10 Kingdom. We are the president of the G8, which
11 just had its summit, although that presidency runs
12 through the rest of this year, and also on July
13 1st we assume the presidency of the European
14 Union, the 25 members of the European Union.

15 And the UK's environmental priority
16 for -- the presidencies for the EU, for those that
17 don't know, run in six month terms, for it's for
18 the rest of this year -- but it is our top
19 environmental priority, is to keep action on
20 climate change high on the international agenda,
21 to work with the EU partners, and to continue to
22 show progress.

23 Quick update. Ned actually gave some
24 quite useful detail on the emissions trading
25 system, the ETS. But just to quickly give you

1 some background, the directive was adopted by the
2 Commission in 2003, the headline is that it's
3 starting to come into effect in January of this
4 year, and we are currently trading in Europe.

5 The allowances are out, people are
6 recording, and next April will need to turn in
7 their first batch of allowances to account for the
8 2005 emissions.

9 When the 25 member countries tried to
10 come up with a system of how to build a trading
11 system and yet maintain national identities and
12 national control, and these are certainly 25
13 significantly different countries, not only in
14 their fuel mix but in their systems of government.

15 There was some work to be done to make
16 this system flow well, and so one of the key
17 things to measure, and I'm not quite sure just how
18 this will apply here in California, but when you
19 look at what is the discretion of the member
20 states on the scope of the plan in terms of what
21 facilities, what industries were covered, the
22 members really did not have much control over
23 that. That was sent by the Commission.

24 They don't have a lot of discretion on
25 what they report and how they report it, although

1 on the verification on emissions and on the
2 penalties imposed they do have a little bit more
3 discretion on the registry. That is a Commission
4 effort, there's not a lot of choice there how that
5 is managed.

6 But there is significant opportunity for
7 each member state to decide how the national
8 allocation of emissions is divided amongst the
9 facilities within the country. And as Ned
10 mentioned, that piece has been one of the most
11 difficult in not only dividing the allowances
12 among the countries, but in then getting down to
13 the individual countries, the individual
14 installations.

15 As Ned said, there are about six
16 industries that are covered, plus electricity.
17 This is in phase one. It covers about 12,000
18 installations which emit approximately 46 percent
19 of the CO2 emissions.

20 Some of the economic analysis shows that
21 the allocations that were laid out in phase one
22 are going to be below base case, so the point is
23 we are going to need to see reductions here in
24 this first phase, but again as Ned mentioned, this
25 first phase is a, in many respects, a test phase.

1 The next phase, starting in 2008, will
2 be more robust in a couple of ways, but will build
3 upon some of the lessons that we're learning here
4 in phase one.

5 The other point is that there's no
6 secret that the system is designed to help the
7 member countries meet their Kyoto targets, so this
8 is aligned with the Kyoto mechanisms. We do not
9 see or predict significant impacts on
10 competitiveness, again a number of analyses have
11 shown that, because of the scale that we're doing
12 this we will not see impacts on competitiveness.

13 In fact there could be several sectors
14 that profit, and that's just something that is
15 constantly being measured, because we want to know
16 that impact as we go forward.

17 Just quickly going into the next phase,
18 deadlines for submissions for the NAP. The NAP is
19 the National Action Plan or National Allocation
20 Plan. For the next phase the deadline is one year
21 from now.

22 If that's for me you can take a message.

23 And we will start to see in end of 2006
24 and beginning of 2007 you should see the systems
25 for the second phase. They --

1 (voices in background)

2 COMMISSIONER GEESMAN: Someone on the
3 telephone need to mute their phone. You're coming
4 through and disrupting our meeting.

5 Thank you.

6 MR. REILLY: So, as we go to the second
7 phase there will be significant effort to consider
8 what is the total quantity of allowances, that's
9 obviously the key point. What's the total pot,
10 and then once that's decided we can move forward
11 on how to allocate that on all the different
12 sectors that will be covered.

13 It's the UK's expectation and desire
14 that the next phase actually has some additional
15 elements added in. We want to continue to
16 maintain high standards for monitoring and for
17 verification, which is critical, you cannot go
18 forward without reliable information.

19 Enforcement needs to be clear, that the
20 sanctions are being enforced. We would like to
21 see and will encourage a discussion of linking
22 aviation emissions, which are not covered in phase
23 one but -- I heard those mentioned here in
24 California -- we do hope to see that discussion
25 going forward and would support that.

1 Next week there is a workshop in London
2 looking at links to other schemes, what are the
3 opportunities to link the ETS to perhaps something
4 here in this country or in Canada, what are some
5 of the mechanisms there.

6 This will be a logistical and in some
7 cases a legal challenge to link the system outside
8 of Europe. But there is interest in doing that
9 and this workshop in London next week is one of
10 the places where that discussion would occur.

11 And I'm happy, if folks are interested I
12 can help you learn about that workshop. And in
13 the UK it is a priority to pay attention to what
14 is happening here, both in the RGGI effort here in
15 the Western states, and others.

16 One of the key opportunities for
17 leadership this year is the G8 summit, which is
18 held by the UK this year. The summit meeting
19 itself was held just last week, which I think you
20 may have seen in the news.

21 The eight countries -- the UK, US,
22 Germany, Canada, France, Italy, Russia and Japan -
23 - and this year, typically the EU is invited, but
24 also the Prime Minister, for the discussion
25 climate change, which was one of his two

1 priorities, asked that the leaders of China,
2 India, Brazil, South Africa, and Mexico, which
3 were the next five largest emerging economies
4 important on the greenhouse gas emissions, he
5 asked that they be in Glen Eagles, and we'll talk
6 about why that was important.

7 The Prime Minister gets this, and he has
8 said several times that climate change is the
9 world's greatest environmental challenge, and
10 continues to say that and continues to learn and
11 really seek information personally. He is quite
12 interested in this topic and that is why he put it
13 as one of his two top priorities for the G8,
14 alongside of alleviating poverty in Africa.

15 And he set out three aims for the G8
16 summit. One was to build a solid foundation on
17 the science. We continue to hear discussion about
18 the science, e wanted to move forward on that. He
19 wanted to speed up scientific progress on
20 technology and help develop a package of energy
21 efficient and low carbon technologies that could
22 be deployed, particularly that could be deployed
23 to emerging economies.

24 And he wanted to engage the large energy
25 consuming nations, which happen to be most of the

1 G8 plus those other five, in a future discussion.

2 On July 8 he was able to announce that
3 there was agreement for the first time by those
4 leaders, including America, on the seriousness of
5 the problem, the evidence of the science, the role
6 of human activity, and the need for urgent action.

7 There was agreement on a plan of action
8 which is actually quite detailed, and I would
9 direct you to the number 10 website, where this is
10 available, on near-term technologies and
11 strategies to deploy to emerging economies.

12 And perhaps most importantly is the
13 commitment to start a new dialogue among those G8
14 countries, plus those next five, and perhaps
15 others, which will begin November 1st in Britain,
16 and will report to the next two G8 summits.

17 So, in conclusion, this is a significant
18 national priority of the United Kingdom. Climate
19 change and energy security is something that is
20 drawing the attention of the top people in the
21 government.

22 We are aware that we cannot do it alone,
23 and there is a significant effort to reach out
24 internationally.

25 The Prime Minister, in his remarks on

1 Friday, said it as clearly as I think I've ever
2 heard him say, he said "we cannot go forward on
3 climate change without America, China, and India
4 with us." And that is how he will proceed.

5 The experience is that we can do this,
6 that it is affordable, and it's actually an
7 opportunity, not a cost. There are a number of
8 websites in the presentation that will direct you
9 to the results of the summit, to our ambition for
10 the EU presidency, and also the top several are
11 some of the centers of excellence in the UK that
12 have some more information.

13 I'll be happy to answer any questions,
14 or jus move to the next panelist.

15 COMMISSIONER GEESMAN: I do have a
16 question. Did our review identify particular
17 economic sectors that would suffer a loss in
18 competitiveness? And if so, what were they?

19 MR. REILLY: The questions on
20 electricity production, because electricity
21 production cannot move offshore, there was a lot
22 of work given to would our electricity become more
23 expensive, and what would the impact be on
24 electricity consumers.

25 So some of the heavily energy dependent,

1 electricity dependent industries are going to need
2 to be watched closely.

3 Opportunities for profit include the,
4 the UK is developing significant expertise in a
5 number of the renewable energy technologies on
6 offshore, wave energy and marine power, the
7 expertise in working on offshore oil rigs, that is
8 a technology that is uniquely UK, and partnering
9 with some other countries that have wind
10 technology we are seeing quite an opportunity to
11 put wind turbines and wind generation offshore, so
12 there's opportunities for economic growth there.

13 COMMISSIONER BOYD: Mr. Reilly, a
14 question. Your chartered WRAP on the fuel mix for
15 electricity generation without carbon constraints,
16 I note that you have nuclear more or less
17 disappearing from the scene, if I interpret this
18 correctly, about 2035.

19 I just was wondering, is that a product
20 of a policy decision or is it more a product of
21 the end of life of plants?

22 MR. REILLY: Commissioner Boyd, it's
23 actually a little bit of both. There was a
24 decision not to build new nuclear, and so this
25 assumption is that existing nuclear would not be

1 renewed and would shut down, just assuming
2 standard life expectancy for all the remaining
3 reactors.

4 There is not a new policy on nuclear in
5 the UK, although there is a willingness to ask the
6 question of how are we going to meet our CO2
7 targets, and is nuclear part of that equation or
8 not.

9 But there is no new policy, but I
10 think -- the energy white paper, which I think was
11 in 2002, could be reviewed going forward, and that
12 might be one of the discussions that that
13 contains.

14 COMMISSIONER BOYD: Thank you. I not
15 the similarities between large economies like the
16 nation/state of California and the UK. This
17 committee, Commissioner Geesman and I, will have a
18 two day hearing on nuclear as it relates to our
19 plans for the future in August, I guess.

20 And not to be totally deferential, I
21 guess we're going to have two days on coal as well
22 in the month of August. And I note some of our
23 views about the future are very similar.

24 MR. REILLY: Thank you for this
25 opportunity, but I also would encourage you to

1 learn or visit the UK and meet with our experts
2 there. If you're interested we would certainly be
3 willing to help you make that visit.

4 MR. LLOYD: One question on the
5 transportation side. Clearly there was a
6 significant increase in dieselization in the light
7 duty fleet. Do you expect that to continue, and
8 how would you see that playing out in terms of
9 some of your targets?

10 MR. REILLY: I do not have the data on
11 future forecasts for diesel. We certainly do use
12 much more diesel on a percentage basis in the UK
13 than we use here for transportation. I don't know
14 what the future forecasts are, but I would be
15 willing to pull that data together and bring it
16 back and submit it.

17 MS. CHO: Just a followup on the nuclear
18 issue. On the following chart, where you showed
19 the energy mix with the carbon constraints, you
20 show a very large share of nuclear power. Does
21 that imply that the UK would be looking at policy
22 changes in order to make that happen?

23 MR. REILLY: No, and I did want to just
24 make that point. That chart is not UK policy.
25 That is one of the examples of ways to meet a

1 carbon target that has been considered, but has
2 not been agreed upon, would probably be the best
3 way to put that.

4 And so that policy, I think that
5 scenario there would require a combination of
6 relicensing and life extension of existing
7 reactors and looking at new build.

8 MS. CHO: Okay.

9 COMMISSIONER GEESMAN: Thank you very
10 much.

11 MR. DUVAIR: Okay, thank you, Jim, for
12 that presentation, that's very informative. We do
13 have all of these presentations posted on the
14 Energy Commission websites for the audience and
15 for those unable to attend this workshop today.

16 And our second speaker is going to be
17 Ralph Cavanagh from the Natural Resource Defense
18 Council. He's the co-director of the energy
19 program at NRDC. He's been the co-director since
20 1979.

21 Ralph has recently served on the
22 national committee on energy policy, and he's also
23 a member of the Energy Commission's Climate Change
24 Advisory Committee, and Ralph says that he has
25 taught the first class on climate policy at an

1 accredited law school here in the US.

2 So Ralph's been working in the climate
3 arena for some time.

4 MR. CAVANAGH: Thank you. I very much
5 appreciate the chance to be part of a
6 distinguished panel. I also, as the first NRDC
7 northwest energy program director am delighted to
8 share the podium with Tony Usibelli, thanks in
9 good part to him there's a great deal to hear
10 about the northwest.

11 But that's his role. My presentation
12 will be much more concise than the one that
13 preceded it because, frankly, Mr. Reilly had a
14 great deal more to talk about.

15 My focus is the Congress and the
16 Administration of the United States. This is a
17 concise presentation but not one without
18 substance, because on June 22nd I do think that
19 something happened of remarkable consequence that
20 has changed the discussion and the tenor of the
21 debate in Washington in an enormously positive
22 way.

23 I think those in this room and those
24 behind that dais are part of the reason for it,
25 and I want to dwell on it for just a moment.

1 What happened on June 22nd was that 53
2 Senators voted for a resolution, which I've
3 submitted for the record here. The guts of that
4 resolution are less than 30 words long, and I just
5 want to read it.

6 "Congress should enact a comprehensive
7 and effective national program of mandatory,
8 market-based limits and incentives on emissions of
9 greenhouse gases that slow, stop, and reverse the
10 growth of such emissions."

11 A majority of United States Senators
12 went on record in support of a comprehensive and
13 effective national program of mandatory market-
14 based limits.

15 And that resolution effectively replaced
16 and supplanted the last statement of the Senate on
17 this subject, in 1997, where by a 95 to zero vote
18 Senator's Byrd and Hagel put forth a resolution
19 that effectively declared an indefinite moratorium
20 on any congressional action to enact comprehensive
21 and effective mandatory market-based limits.

22 The change of heart is clear if you look
23 at the vote, which is particularly impressive in
24 its bi-partisan character. Twelve Republicans
25 voted for this resolution, sure you'd expect I

1 suppose Senators Chafee, Collins and Snow to be
2 there, maybe Senator McCain, but Lindsay Graham of
3 South Carolina, Alexander of Tennessee, Gregg of
4 New Hampshire, Lugar of Indiana, Specter of
5 Pennsylvania, Senator Domenici of New Mexico,
6 Senator Warner of Virginia and Senator Byrd
7 himself.

8 And in a statement that I've also
9 submitted to the Committee, Senator Byrd giving
10 his own historical perspective on how he felt the
11 1997 resolution had been misunderstood, and how
12 important it was to send this new signal and how
13 glad he was to be helping to do it.

14 In terms of how this bipartisan
15 statement came to pass on June 22nd, there is no
16 question in my mind, the New York Times editorial
17 called "The Heat Is On" the week before drew a
18 link that I now underscore between what the
19 Congress was then doing finally on a bipartisan
20 basis and what the state of California had been
21 doing for an extended period.

22 And we can look back I think to a series
23 of events, starting with perhaps the February
24 convocation at the California PUC auditorium where
25 so many of you were present, where essentially

1 California's entire agency leadership on energy
2 and environment came together to address climate
3 solutions moving forward to the Governor's
4 announcement in early June with a whole host of
5 actions in the meantime by the Public Utilities
6 Commission, the Energy Commission, the California
7 EPA.

8 Setting the kind of example on
9 bipartisan cooperation that ultimately became
10 irresistible for the Congress.

11 And I am here to note NRDC's
12 appreciation for that example and as always I
13 cannot resist the temptation to make a couple of
14 suggestions as we go forward together.

15 There is no question, in terms of
16 climate leadership, the California PUC and the
17 Energy Commission and the Cal EPA have done yeoman
18 service in terms of aggressive targets for the
19 utility sector, for transportation.

20 The Energy Commission is now engaged on
21 the crucial question of tire efficiency, the
22 Energy Commission ha maintained the pressure on
23 equipment and efficiency standards. The PUC is
24 pushing very strongly on efficiency and renewables
25 targets.

1 We all know there are significant
2 execution challenges. Commissioner Geesman has
3 been tireless on the question of what's needed to
4 strengthen the California power grid, for example,
5 and the western grid, to get our renewables
6 targets to happen.

7 But those challenges are I think well
8 understood in this room and we're moving forward
9 together to address them.

10 I want to highlight one place where I
11 think we need to do more, and to encourage the
12 Energy Commission in particular, as part of this
13 process, to consider taking up the effort to do
14 more.

15 And the concern I have has to do with
16 what I think is a growing disparity of effort and
17 climate leadership between California's investor-
18 owned utilities responding to the challenges and
19 the targets of the California PUC and the public
20 power sector.

21 I see a growing disparity in the level
22 of effort and the level of achievement on both the
23 energy efficiency and renewable energy between the
24 investor-owned utilities and public power, and I
25 say this as someone who I believe has ample

1 credentials as a friend of public power and
2 someone who certainly has no theological view on
3 the appropriate form of ownership of the utility
4 sector.

5 California's publicly owned utilities
6 have a splendid record, of which they can be
7 proud, on a whole host of public service counts,
8 including climate leadership, in the past.

9 And they stepped up in 1996, as many of
10 the people in this room remember, and guaranteed,
11 through statutory action by the legislature that
12 they supported, that they would match California's
13 investor-owned utilities in relative level of
14 effort on energy efficiency and renewable energy,
15 that there would be no competitive advantage
16 associated with any lack of effort on the public
17 power side.

18 And that commitment was widely
19 appreciated and noted around the country. The
20 problem now is that the investor-owned utilities
21 are moving forward more aggressively, thanks to
22 prompting from every regulatory entity represented
23 in this room.

24 They are now well beyond the statutory
25 minimums of 1996 and public power has not risen to

1 match the challenge with the single very specific
2 distinct and honorable exception of the Sacramento
3 Municipal Utility District, which I will happily
4 call out in this room to no dissent, I suspect,
5 from anyone in this room.

6 But that is the distinct and honorable
7 exception. My concern about the growing gap
8 between public power achievement and private power
9 achievement -- and I'm talking about achievement
10 here, obviously the concern is what are we getting
11 in terms of climate benefit, not what are we
12 spending.

13 But in terms of if you look at the
14 conservation targets as a fraction of total use,
15 if you look at the renewables targets as a
16 fraction of total consumption, and you ask the
17 question is public power keeping pace, the eight
18 systems that I've looked at over the past year,
19 which make up more than 75 percent of total
20 electricity sales from the public power sector,
21 again with the exception of SMUD, we are not
22 getting there.

23 We have a distinct and growing gap. And
24 what I encourage this Commission to do -- and by
25 the way, I have shared these views and these

1 results with a very unhappy CMUA leadership, so
2 they are in no sense getting blinded by this, they
3 know of our concern.

4 What we hope you will do on this
5 particular issue, and certainly not to take my
6 word for it, but to start asking the question and
7 to start creating the basis for a friendly but
8 aggressive competition throughout California
9 between public and private power, not just for
10 climate leadership but obviously for all the other
11 dimensions of leadership that efficiency and
12 renewable energy investment connote.

13 And that you will specifically make it
14 easy to see, and it's now difficult to see, it
15 takes a lot of dredging and a lot of hard work to
16 figure out whether the public power targets are
17 commensurate with the private power targets and
18 whether the gap is growing or closing.

19 We hope you will make it easy by getting
20 that information, providing it in an accessible
21 way, and really holding all of us, public and
22 private power together, because that's the
23 California family together, to account for a
24 mutual effort to meet the Governor's climate
25 targets and to continue to press ahead with the

1 efficiency and renewable energy leadership of
2 which Californians are justly proud.

3 So if I am to leave you today with one
4 specific suggestion it is to give that issue more
5 prominence, and make sure in a friendly but
6 terribly important competition, that both sides
7 are pushing hard for leadership, because all
8 Californians will be winners if they are.

9 So Commissioners, I will leave you with
10 this. I do believe that the odds are now greatly
11 improved for California, for the nation to enact a
12 comprehensive and effective national program of
13 mandatory market-based limits and incentives on
14 emissions of greenhouse gases.

15 I think the likelihood of Congress doing
16 it has been materially affected by the willingness
17 of California to grapple seriously with these
18 issue on a bipartisan basis, as you have been
19 doing, Commissioner Boyd, for the last two days in
20 this room, as Secretary Lloyd now prepares to do
21 as the leader of the Governor's Climate Action
22 Team.

23 You are addressing precisely the tough
24 questions that the Congress is now taking up. You
25 will get us a wholly deserved head start as you do

1 that. As those emissions limits are adopted I
2 have every confidence that California will gain a
3 wholly disproportionate and well-deserved benefits
4 in no small part because of your good work for
5 which we thank you all.

6 COMMISSIONER GEESMAN: Thank you, Ralph,
7 I think those are well taken remarks. I guess the
8 one thing that I would add to it is that we speak
9 generically of public power, but I think everybody
10 in this particular field knows that the principle
11 leverage point is the City of Los Angeles.

12 Commissioner Boyd and I repeatedly
13 confronted this issue over the course of our 2004
14 Integrated Energy Policy Report update. I think
15 that we've made good progress there, that the
16 newly elected Mayor has been quite clear in the
17 priority he attaches to matching the state's
18 accelerated renewable portfolio standard.

19 By historical measure that would mean
20 the Department of Water and Power should follow it
21 in the next decade or so. But the Mayor will make
22 appointments to the Water and Power board there,
23 and I think that over the next several years we
24 can work successfully with that new board to
25 better bring Los Angeles into alignment with the

1 state's objectives.

2 LA is the lead cow in that herd. It's
3 got a very effective number two cow in terms of
4 SMUD, but I think that, with concerted effort on
5 the part of a lot of people in the City of Los
6 Angeles that lead cow is turning.

7 MR. CAVANAGH: And Commissioner Geesman,
8 I very much hope that's the case. If I could
9 suggest, though, one other source of constructive
10 pressure for you to put on the lead cow and all
11 the other cows, in addition to the renewable
12 energy targets, which are specific and a good form
13 of accountability, the California PUC has now
14 created the equivalent of an energy efficiency
15 target which basically says if you're a utility
16 with a significant conservation program you ought
17 to be saving at least one percent of system use a
18 year.

19 Now that can't sound to anyone in this
20 room like a spectacularly ambitious thing to do,
21 one percent of system use a year. That is where
22 the California investor-owned utilities now are.

23 I hope you will ask my friends in public
24 power where are you? What fraction of system use
25 are you saving, and do you have the same kind of

1 independent verification of savings that the
2 California PUC rightly insists on as a core part
3 of the investor-owned utility effort.

4 And Commissioner Geesman, if you press
5 that question home right now you won't like the
6 answers you get immediately but you'll put a lot
7 of constructive pressure on to get better answers
8 in the future.

9 COMMISSIONER GEESMAN: And while
10 Commissioner Boyd was here in this room yesterday
11 Commissioner Pfannensteil and I were several
12 blocks away at Cal EPA headquarters conducting a
13 workshop on energy efficiency.

14 Under our regulations all the utilities
15 are required to report certain data on the
16 effectiveness of their energy efficiency programs,
17 and I think with the exception of SMUD none of
18 them are up to snuff, and we received no
19 information whatsoever from the City of Los
20 Angeles.

21 So I think your point is extremely well
22 taken, it is one that we intend to follow up on.

23 COMMISSIONER BOYD: Thank you, Ralph,
24 always a pleasure.

25 MR. CAVANAGH: Thank you.

1 MR. DUVAIR: Okay, well, Ralph always
2 brings great energy to his delivery, and content
3 was very good as well. Fairly short with the
4 sense of the Senate really was a high profile
5 recently on the federal level, and Nancy Skinner
6 is going to be our next speaker, and Nancy is also
7 going to provide some additional input to the
8 Committee on the national context for climate
9 policy for California.

10 Nancy is the US Director of The Climate
11 Group, and Nancy has worked for more than ten
12 years on climate change. She formally was the
13 international director for the Cities For Climate
14 Protection through ICLEI, the International
15 Council for Local Environmental Initiatives.

16 Her academic training is in conservation
17 resource studies, and Nancy says she was the co-
18 author a while back on a book called Fifty Simple
19 Things You Can Do To Save The Earth.

20 So, with that, Nancy?

21 MS. SKINNER: Thanks, Pierre, and good
22 morning to our members of the community and public
23 that are here, and Commissioners, and agency
24 representatives.

25 Briefly I'll first -- well, what I want

1 to do in this presentation is sort of set a frame
2 for what Ralph was talking about and perhaps not
3 only why but how it came about that the Senate
4 took the action that it did, but then some of the
5 sort of context or contrasts that's happening
6 within the national policy context right now.

7 Before I start, a little bit about The
8 Climate Group. The Climate Group is a relatively
9 new organization, we're about a year and a half
10 old. We were launched in April of 2004 in London
11 at an event that Tony Blair presided over, Prime
12 Minister Blair.

13 We had about 20 Fortune 500, well they
14 weren't all Fortune 500 but most of them were, 20
15 CEO's at that event, and agency representatives
16 from state government including state of
17 California and state of Massachusetts.

18 And our purpose is to be a leadership
19 coalition, to communicate the economic
20 opportunities and the business case message of
21 climate protection.

22 I think too often, especially in our
23 country, in the United States, not only do we read
24 whenever we pick up the newspaper articles do we
25 read these, what I would say at this point of time

1 is absurd caveats about the science because
2 there's not been a stronger consensus among the
3 global scientific community on such an issue as
4 there is on this one.

5 But we also tend to see this sort of
6 economic doomsday sort of predictions. And even
7 our president, unfortunately just recently in the
8 run up to G8, indicated that, his sense that
9 somehow action on climate protection would ruin
10 the US economy.

11 And I think that, not only think, but
12 our purpose in the The Climate Group is to show
13 these companies and corporations, significant
14 corporations that have taken significant action,
15 and as a result have increased their economic
16 competitiveness.

17 And this is not just a money savings
18 aspect, but they've increased their economic
19 competitiveness, their market share, their
20 bringing technologies to market, they're leading
21 the pack to a low carbon future, which as we all
22 know very well needs to be done, not only through
23 public policy but also through the marketplace.

24 But California is a great example of
25 this sort of economic opportunity message, and the

1 Energy Commission's own program, the PIER program,
2 which is the Public Interest Energy Research
3 grant, have brought over 33 clean energy products
4 to the marketplace.

5 But I'll talk about national context
6 right now. So, federal administration approach on
7 climate change. Now when I say federal
8 administration I'm talking now primarily not
9 Congress and Senate but the White House type of
10 programs.

11 The main feature is to fund research, to
12 fund R&D for clean technologies, there's some tax
13 credits, and these were all put in place in 2002.
14 President Bush's, climate change strategy, and
15 they included \$4.6 billion in tax credits for
16 investments in renewables, hybrid and fuel cell
17 technologies, cogeneration, and various things
18 like that.

19 Expanded funding for climate change
20 research and technology, mostly science impacts
21 and such, and then this greenhouse gas intensity
22 goal, which I'll talk about in a second.

23 But the very bottom of the slide, it's a
24 little obtuse, but it's basically trying to
25 communicate that amongst the programs the

1 administration has continued or backed, they are
2 voluntary. And they are voluntary programs under
3 both the Department of Energy and EPA. I'll talk
4 about the EPA's a little more.

5 The Department of Energy's are sort of
6 under a broad rubric called climate vision, and
7 they're focused on the energy intensive
8 industries, and there's also been a long effort to
9 improve what's called DOE 1605B, which is their
10 form of reporting.

11 And I bring that one up because
12 yesterday -- I'm also on the state's Climate
13 Change Advisory Committee to the Energy Commission
14 -- and there's been a lot of discussion around
15 whether reporting mechanisms are effective,
16 whether the inventory methodologies that have been
17 developed, are they adequate, does the inventories
18 that, say, those entities that are reporting
19 either under the global reporting initiative or
20 the California greenhouse gas registry, or even
21 for that matter 1605B, are they vigorous enough,
22 rigorous enough and such that you could develop
23 regulation and market-based measures.

24 And I bring that up because there's
25 obviously huge gaps between reporting protocols of

1 say the Department of Energy and others, but I
2 would say that within our state, under the
3 California Climate Action Registry, that
4 methodology is far superior.

5 I wanted to show you this. This is the
6 administration's own, while I put the Climate
7 Group's logo on it this graph is directly from the
8 White House, and it shows what the Bush
9 Administration's target on energy intensity, the
10 communicated goal of decreasing the energy
11 emissions intensity of our economy by 18 percent.

12 But why I put this slide up here is to
13 show you on this graph that in effect, while
14 that's a decrease in our intensity per unit of
15 economic growth or economic output, it is an
16 actual increase in emissions.

17 And that increase, from the period of
18 2002 to 2012 would be approximately, about 1,500
19 million metric tons of carbon. So that's over
20 2002. I don't have the calculation for you over
21 1990, but it just shows a very, very, that the
22 plan is a very significant increase rather than
23 any decrease, which the scientific community feels
24 is necessary to avert the most dangerous aspects
25 of climate change.

1 This is just an overview of some of
2 EPA's voluntary programs, there's many, Energy
3 Star's probably the most known, and Energy Star.
4 Many of the others are basically under the rubric
5 of Energy Star. Climate Leaders is EPA's program
6 that engages with companies, businesses,
7 corporations that voluntarily agree to set targets
8 and reduction activities amongst their emissions.

9 As Ralph mentioned by virtue of giving
10 you the example of the Senate's recent action,
11 there's a widening gulf between the Administration
12 and Congress.

13 The first slide I talked about what the
14 Administration's focus is, and it's been on tax
15 credits and funding R&D, but interestingly enough
16 in 2004 Congress increased the Administration's
17 climate change technology budget by 63 percent.
18 So what the Administration wanted to put forward
19 Congress felt needed to be substantially
20 increased.

21 And in this 2006 budget, which has not
22 yet been adopted but has been proposed, the
23 Administration has proposed reductions compared to
24 what Congress feels is necessary for both the
25 energy technology funding, the climate technology

1 budget, and also the science and international
2 programs that are all part of the Administration's
3 approach to addressing climate change.

4 So that's an interesting aspect that's
5 less reported on.

6 Ralph mentioned the Senate resolution.
7 It was actually 53 votes, and the interesting
8 other context is that Senator Hagel, who was the
9 co-author with Senator Byrd of the 1997 anti-Kyoto
10 resolution also introduced a bill, though it was
11 primarily voluntary, to compete with the McCain-
12 Lieberman bill, which was a cap and trade bill.

13 Now that is still in progress, as is
14 McCain-Lieberman, and the actions would be
15 primarily voluntary, but it's just I think a very,
16 it's a good example of a significant shift within
17 the Senate when Senator Hagel feels that it's
18 necessary to put forward a bill that indicates a
19 necessity for action.

20 I mentioned the last point already. The
21 thing that I also want to talk about which I think
22 has had a great influence, Ralph mentioned the
23 state of California's leadership, and we've had
24 lots of examples beyond Governor Schwarzenegger's
25 announcement and the Energy Commission's and the

1 state legislature's long-term policy around energy
2 efficiency, funding of energy efficiency, focus on
3 promoting renewables and such, we also have, as
4 many of you may know, our pension funds, which are
5 some of the largest pension funds in the world,
6 are now looking at their investments from a clean
7 energy and a carbon change point of view.

8 Our Attorney General has joined with a
9 number of other states in suing a number of coal
10 plants, in terms of the point of view of whether
11 those coal plants and their growth in emissions
12 have factored, what are the climate change impacts
13 on public health and such.

14 But you also have a great number of
15 other states in the US that have taken action on
16 climate change. And in addition to that you have
17 the private sector, corporations in the United
18 States have been, while maybe not so loud
19 publicly, quite, quite active in adopting internal
20 greenhouse gas emissions policies and targets ,and
21 implementing those quite aggressively.

22 And implementing those not only for
23 their internal money savings, because of the
24 reduction in their overhead and operations costs,
25 but also in terms of increasing their market

1 competitiveness.

2 And so I give you some examples there,
3 but I also can refer you to a publication that The
4 Climate Group did recently, California Low Carbon
5 Leaders -- I put some on the outside tables --
6 which documents a full host of California
7 corporations, including Gap, Cisco, Qualcomm,
8 Hewlett Packard, Fetzer, Vineyards, various
9 others, who have taken similar actions of those
10 I've mentioned here, and also members of The
11 Climate Action Registry.

12 Three hundred of the world's largest
13 companies, so 300 of the Fortune 500 corporations
14 already are in effect voluntarily reporting to a
15 program called the Carbon Disclosure Project. And
16 you can go on the web and find those reports.

17 Businesses across the US and across the
18 globe are now asking how can my company reduce
19 emissions and what are the business opportunities
20 for addressing climate change.

21 Additionally, corporations are looking
22 at, if you look at the eco imagination
23 announcement by the CEO of General Electric
24 Jeffrey Imhelt, he looks at it as a business
25 opportunity.

1 His press announcement and his
2 statements were not so much from a point of view
3 of so much the environmental benefit and the
4 ecological benefit of addressing climate change,
5 but rather a business opportunity and a way to
6 improve GE's standing.

7 US businesses are now beginning to call
8 for regulations. They want a level playing field,
9 clear, transparent and consistent price signals.
10 CEO's of companies such as Duke Energy, Ford, HP,
11 Synergy, and Cisco all signed a letter that they
12 sent to Prime Minister Blair in the run-up to the
13 G8 meeting in Glen Eagles indicating that they
14 were happy that Prime Minister Blair chose to make
15 climate change a focus of the G8 summit, and that
16 they wanted to see both national and international
17 action that helped --.

18 For businesses, they like predictability
19 and consistency. They like to make long range
20 plans. They like to see what's coming down the
21 pipe and they would like uniform and consistent
22 type of action.

23 Merrill Lynch recently released a report
24 titled "Energy Security and Climate Change" that
25 was focused on cars, but it basically gave stock

1 recommendations. It's the first time a major
2 investment advisor has come forward with stock
3 recommendations based on a global analysis of
4 climate change policies.

5 So besides the business community
6 activity, the state government activity, some of
7 the other contexts that are sort of influencing
8 congressional responses and public opinion, media,
9 is that the Kyoto Protocol is in force.

10 It's no longer a matter of who's going
11 to join on to it, it is enforced. Even though the
12 US is not a participant it's enforced, and there's
13 pressure from the global community for the US to
14 act.

15 The CDM mechanisms, which are the Clean
16 Development Mechanisms, these are economic tools
17 within the Kyoto Protocol which were basically
18 negotiated by the United States during the Kyoto
19 negotiations in '97, so most of these mechanisms
20 came from US government economic advisers, they
21 are not as effective without US participation.

22 So they were the mechanisms to in effect
23 assist China, Africa, India and others to develop
24 along a lower carbon path. So there's pressure
25 where the US was a better participant on that

1 international playing field there would be perhaps
2 more movement on the part of China, Africa and
3 India.

4 Obviously allies such as Prime Minister
5 Blair put climate change squarely on the G8 agenda
6 in Glen Eagles. You have religious groups now in
7 the US, the Catholic Conference of Bishops, the
8 National Association of Evangelicals, and the
9 National Council of Churches recently put out a
10 statement.

11 They formed this national religious
12 partnership for the environment, and just recently
13 issued a statement that said global warming is a
14 universal moral challenge.

15 And the other interesting sort of
16 confluence that I don't put on my overhead here is
17 that the National Academy of Science of over 11
18 countries -- India, China, US, UK, Germany,
19 Brazil, a whole number of others -- the heads of
20 the national Academy of Sciences released a joint
21 statement that basically said climate change is
22 real, it's human induced, it requires action, and
23 we want governments to unify and act on it.

24 So this was also quite unheard of. I
25 don't recall finding any when I did my Google and

1 Yahoo searches that there has ever been a joint
2 statement by such a, by that number of country-
3 wide National Academy of Sciences on any other
4 scientific issue before.

5 So I would wrap up, in your
6 deliberations, that it is very good for California
7 to be both a laboratory and a leader, and that
8 while national or even larger regional policies
9 and programs may be preferable to enlarge markets,
10 to broaden impacts, to bring about significant
11 reductions that are needed to help this global
12 problem, California is significant enough
13 economically and in its level of emissions that it
14 is sufficient for initial infrastructures in
15 carbon reductions.

16 Whether those are appliance standards,
17 which have already been put into place by
18 California, or the vehicle standards, such as the
19 Pavley bill, or potentially new measures such as
20 cap and trade, that's a possibility, or there's a
21 variety of others.

22 Where the debate may be that yes, it
23 might be better to do that regionally or it might
24 be better to wait and do that nationally,
25 sometimes action as we know, and certainly you are

1 experienced with this as being initiators as
2 actions as this state has done first, sometimes
3 this is the best laboratory for testing and
4 developing and promoting then that action on a
5 broader context, whether it's nationally or
6 internationally.

7 So I applaud you in the work, and thank
8 you for asking me to speak.

9 COMMISSIONER GEESMAN: Thank you, Nancy.
10 Could you provide us with a copy of the Merrill
11 Lynch study that you mentioned?

12 MS. SKINNER: Yes I could.

13 COMMISSIONER GEESMAN: Thank you very
14 much, and please have that go into our docket.

15 MS. SKINNER: Okay.

16 MR. DUVAIR: Okay, yes, thank you,
17 Nancy. Our next speaker will provide the regional
18 and state perspective.

19 We have Tony Usibelli visiting us here
20 from the state of Washington. Tony is the
21 Director of the Environmental Policy Division in
22 the Washington Department of Community Trade and
23 Economic Development.

24 Tony has been working with the West
25 Coast Governor's Global Warming Initiative since

1 that was launched back in 2003 I believe, and he's
2 been working on energy issues for more than 20
3 years with the state of Washington.

4 And prior to his move to Washington he
5 worked with Berkeley National Lab in the
6 Environment and Energy Division, and he's got a
7 Master's Degree from UC Berkeley. Tony?

8 MR. USIBELLI: Well thank you very much.
9 Good morning. Good morning Commissioners and
10 agency representatives. I'm very pleased to be
11 here, to come down the coast from the state of
12 Washington and tell you a little bit about why
13 climate change issues, global warming issues, are
14 of particular interest and importance to the state
15 of Washington.

16 I'll give you some perspective on what
17 we've been doing in the state of Washington and
18 tie that in to the regional context a little bit,
19 and as Pierre mentioned, I've been involved since
20 the inception of the West Coast Governor's Global
21 Warming Initiative, which has been a particularly
22 important driver for much of what we've been doing
23 in the state of Washington.

24 So why are we as a state and also as a
25 region acting on climate change. I think these

1 will be familiar to you, certainly a realization
2 that, while climate change has very real impacts
3 to our state and to our economy, and I'll show you
4 a couple of slides on some of those impacts that
5 are particularly important for the state of
6 Washington.

7 Following the previous two comments and
8 despite Ralph's comments on the sea changes
9 underway in Congress, we have certainly seen a
10 serious lack of federal response to what we
11 believe is a very serious problem that the states,
12 regions and the nation need to deal with.

13 We also see that the states and the
14 regions in fact have an ability to take
15 significant action, and significant action that
16 responds to the issues of climate change and
17 global warming, but significant action that also
18 can position ourselves for some of the economic
19 advantages associated with new directions in
20 energy and the opportunities that go along with
21 that.

22 And frankly a desire on the part of the
23 states -- and this is one of the reasons that the
24 West Coast Global Warming Initiative was
25 initiated, was to say, the New England Governors

1 and the Canadian Premiers got together and said we
2 need to be doing something on this, we need to
3 have some influence, not only in our area but as
4 well on national activities.

5 Similarly, that was one of the major
6 reasons why the three west coast states got
7 together to work on this beginning in the fall of
8 2003.

9 Just to give you a little bit of a
10 background on greenhouse gas emissions in the
11 state of Washington, I noted in one of the
12 previous presentations we're about 100 million
13 tons of greenhouse gas equivalent emissions, which
14 is about 30 percent less I believe than the
15 transportation sector alone in the state of
16 California.

17 And there's a lot of information here,
18 and I think the two most salient points is if you
19 look at the upper red graph, transportation is far
20 and away the most significant greenhouse gas issue
21 and the most significant greenhouse gas emitter in
22 the state of Washington.

23 So we have to deal with issues around
24 transportation in order to really get a handle on
25 this. You'll also see the bright green line near

1 the bottom, which is related to our production of
2 electric power, and until 1972 we were essentially
3 a carbon free electrical system in the state of
4 Washington.

5 It was beginning in 1972 that we began
6 to construct the one coal plant in the state of
7 Washington, began to also construct and import
8 coal from plants located outside of the state and
9 subsequent to that have seen the addition of
10 admittedly cleaner but also carbon intense natural
11 gas plants as well.

12 So from a marginal perspective the
13 ability for us to control our use of electricity
14 will have benefits with respect to carbon
15 reduction.

16 COMMISSIONER GEESMAN: Excuse me. What
17 percentage of your electricity is derived from
18 nuclear or has that terminated?

19 MR. USIBELLI: No, we have one operating
20 nuclear plant in the state of Washington, and I
21 believe that represents, trying to think of our
22 latest disclosure numbers, on the order of 12
23 percent, something on that order.

24 So why is this a particular concern to
25 the state of Washington? Well, I think people

1 tend to think of the state of Washington as the
2 state of rain in many regards, and that water
3 would not be a particularly important concern of
4 ours.

5 Well, in fact climate change makes that a
6 particularly important concern. And this is some
7 work that was done at the University of
8 Washington, looking at the water equivalent in our
9 snow over the last 50 years.

10 And you'll notice the proliferation of
11 red dots on there, showing that there's been
12 significant decreases in the water content of our
13 snow.

14 That's important to us because, although
15 we have an abundance of water we do not have a
16 system that provides for a significant amount of
17 storage. The Columbia/Snake River system, for
18 example, stores on the order of about three or
19 four months of our annual runoff.

20 And so we depend on the snowpack for our
21 hydro production, we depend on the snowpack for
22 our security of municipal water supplies and so
23 forth. So the decline in the snowpack and the
24 water content of that snowpack, which we already
25 appears to be happening on a fairly significant

1 basis -- and if we look at the next chart, here's
2 an example of the spring snow melt, which you can
3 see is occurring, the large red dots represent 20
4 days or more earlier than we've had.

5 So not only are we getting less storage
6 we're also getting different runoff patterns,
7 which have consequences for our salmon and
8 consequences for our hydroelectric production and
9 so forth.

10 So we see this as a significant threat
11 to us, our ability to have the water that we need
12 to operate our economy. And we see this going
13 into the future.

14 These are graphs for the top charts.
15 They represent the Pacific Northwest estimates.
16 The bottom chart focuses in a little bit more on
17 wester Washington and western Oregon.

18 But the most salient point, as you can
19 see here, is that there's a significant decline in
20 the Northwest here. Perhaps as much as 50 percent
21 in the Northwest overall by the 2090's, and
22 perhaps more than 70 percent in the Cascade
23 Mountain Ranges of Washington and Oregon in
24 particular.

25 So we'll have less snow, it will melt

1 earlier, we'll have more water in the winter,
2 which may create problems of runoff and problems
3 of flooding and landslides, and less water during
4 the summer period.

5 There are a number of other consequences
6 for climate change and global warming in the state
7 of Washington. In fact, the front page article in
8 the Seattle paper yesterday talked about the fact
9 that Lake Washington has seen an approximately one
10 degree increase in its' water temperature. Lake
11 Washington being one of the cleanest urban lakes
12 in the United States, actually probably in North
13 America.

14 There wa a significant improvement in
15 its water quality beginning in the 1960's. Now
16 they're beginning to see what they believe is the
17 consequence principally of climate change may have
18 a significantly detrimental impact on that major
19 water resource for the Puget Sound area.

20 So water is probably the one thing that
21 I would have folks take away from here, there
22 certainly are other consequences with respect to
23 agriculture and forestry and so forth. But this
24 is what I think is grabbing the attention of
25 citizens and policy makers and businesses in the

1 state.

2 So we began, as I mentioned earlier,
3 looking at climate change quite a ways back.
4 Mostly in the context of energy, and then joined
5 together with the other three states on the West
6 Coast Governor's Initiative.

7 The Puget Sound Clean Air Agency, which
8 is our clean air agency for the four largest urban
9 areas in the state of Washington, Nohomish, King,
10 Pierce, and Kitsap County, have begun a process, a
11 couple of years ago, to look at the issues around
12 greenhouse gas emissions.

13 And these are the results of that
14 analysis. And I would basically just point out
15 two major aspects of this. One is that you'll see
16 that the buildings, facilities, electricity
17 supply, and transportation areas are far and away
18 the largest areas where we need to see significant
19 reductions, but they also offer significant
20 opportunities as well.

21 Particular the buildings, facilities,
22 and electricity supply in the near term, and
23 transportation in the longer term as well. In
24 this analysis you're talking about a 16 or 17
25 percent reduction from current levels by 2020,

1 obviously holding everything else constant.

2 And what we essentially found in this
3 analysis was that these would represent relatively
4 no or low cost and in some cases, particularly
5 related to the efficiency aspects of it and some
6 of the transportation aspects a net decrease of
7 the dollar cost that would otherwise be incurred,
8 principally for energy use.

9 So what have we done in Washington, more
10 specifically? Well, in 1994 we took our first
11 significant action with respect to climate change,
12 in legislative and political action.

13 And that was to establish reduction
14 requirements for new power plants in the state of
15 Washington. Some of you may be familiar that the
16 state of Oregon has had those reduction
17 requirements for its new power plants in place now
18 for probably going on close to about six or seven
19 years.

20 We adopted a similar set, somewhat more
21 stringent than California, although I think one
22 could argue that they are still significantly
23 below the levels where you would set them based
24 simply on cost and policy considerations.

25 But those were adopted. The interesting

1 aspect of that was that we had seen fairly uniform
2 opposition for those types of standards on a case
3 by case basis, but the business community came
4 together with the environmental and public
5 interest community to say we would like some clear
6 standards set forth, and we were able to
7 promulgate this as a bipartisan adopted
8 legislation.

9 And then of course as part of the West
10 Coast Governors we began to talk about where there
11 were some areas of commonality, and two of those
12 areas of particular commonality were the product
13 efficiency standards, which California has been
14 the leader on for a number of years, and of course
15 the California vehicle emission standards, which
16 California has also been a leader on.

17 Those were both recommendations that
18 Oregon and Washington consider adopting, those
19 types of standards, as part of our activities
20 under the West Coast Governor's activities, and
21 I'm very happy to say that both of them were
22 adopted by the state legislature. So we certainly
23 look to California in this regard to provide a
24 model for us.

25 In addition we have adopted lead silver

1 standards requirements for public buildings.
2 We've made the claim that they are the most
3 stringent standards of any state in the United
4 States. I don't know if that's exactly true or
5 not, but they're pretty close.

6 And then a final one that I'll mention
7 that's developing in the state of Washington is a
8 real emphasis on the idea of biofuels, both
9 incentives and then the development of market. I
10 believe Washington is now the single largest
11 consumer of biodiesel in the state, in the United
12 States.

13 COMMISSIONER GEESMAN: What about on the
14 ethanol side?

15 MR. USIBELLI: We currently have no
16 ethanol production facilities. The two small
17 facilities that we had went out of business, they
18 did other things, ethanol was just a byproduct.

19 But the refineries in the state of
20 Washington, we have a significant refinery
21 capacity up there, are using ten percent ethanol.
22 Several of them, BP and -- I can't remember the
23 other -- are using a ten percent blend of ethanol
24 essentially as an octane booster.

25 COMMISSIONER GEESMAN: Have permeation-

1 related emissions been a concern in Washington
2 state for methanol?

3 MR. USIBELLI: We have not run in to
4 those issues. Washington is blessed by the fact
5 that we have no nonconforming, non-complying air
6 quality areas at all in the state. And so issues
7 around criteria pollutant requirements have been
8 less important in the state of Washington,
9 although we certainly made the case that the
10 adoption of the California standards, the current
11 vehicle standards, would have some improvement in
12 our criteria air pollutants as well.

13 But the ethanol-related emissions have
14 not been a particularly major issue for us.

15 COMMISSIONER GEESMAN: Thank you.

16 MR. USIBELLI: So let me talk a little
17 bit about the next steps, and finish off with a
18 couple of suggestions, three suggestions specific
19 to the state of California.

20 And I point to this in particular, and
21 Ralph alluded to this in his presentation, one of
22 the real successes of the Pacific Northwest has
23 been our investment and work on energy efficiency.

24 And in fact the Northwest, over the last
25 20 years, has saved the equivalent of two Seattles

1 at little or nothing to do with climate change
2 being the driver for that but was a significant
3 accomplishment and we believe, based on the work
4 done by the Northwest Power and Conservation
5 Council, that there are more than two Seattles of
6 highly cost-effective, low-risk efficiency
7 remaining.

8 So that's one of our major program
9 directions, is to really make sure that the
10 Council's plan for the next 20 years is fully
11 implemented by the utilities in the state of
12 Washington.

13 We have also considered greenhouse gas
14 reduction goals. We've had legislation in the
15 last session to establish reduction goals
16 comparable to those adopted by California and the
17 New England Governors and others, and we'll be
18 looking at the adoption of those kinds of goals,
19 again whether by executive order or another run at
20 the legislature to adopt those. We haven't made
21 that decision.

22 On the utility front we are looking at
23 the utility portfolio. A little different than
24 portfolio standards in many other states where
25 they've focused on renewables, we've had proposals

1 in the last five legislative sessions for a
2 combination energy efficiency and renewable
3 portfolio standard.

4 I was again struck by some of Ralph's
5 previous comments about the challenges of public
6 power in this regard. I think we probably have
7 the most complex utility structure in the United
8 States, of three investor-owned utilities and 60
9 consumer-owned utilities, and it's been difficult
10 for us to reach some consensus on establishing
11 some efficiency and renewable standards for those
12 utilities.

13 But I think we will be making another
14 try at that again in our session next year.

15 Carbon markets is another area that we
16 are looking at as well. We have not gotten into
17 that level of technical analysis that either
18 California or Oregon has, but we're tracking that
19 process quite closely and are interested in the
20 feasibility and the opportunities for a carbon-
21 based market of some sort, perhaps among the west
22 coast states.

23 And finally on the action side, one of
24 the other things that we're beginning to realize,
25 and initially I think many of you are aware that

1 in the early days of work on climate change there
2 was not a lot of discussion specifically about how
3 you adapt and how you respond to the inevitable
4 consequences of global warming and climate change
5 in order to keep the focus on the need to reduce
6 emissions.

7 However, I think there's been a change
8 in that, particularly in the last couple of years,
9 as people have begun to recognize you need to do
10 both, you need to be able to find ways to make
11 significant reductions in greenhouse gas
12 emissions, but you also need to say we need to
13 plan and be able to adapt and be able to respond
14 to that.

15 And in October of this year King County,
16 which is our largest county, surrounding Seattle,
17 will be holding a conference focusing specifically
18 on what are the likely impacts of climate change
19 on sectors such as water, agriculture, forestry,
20 fisheries and so forth, using a lot of the
21 excellent work of the University of Washington's
22 group.

23 To begin to raise this issue, to begin
24 to say, how do we particularly as public officials
25 who are responsible for making decisions about

1 long-term infrastructure investments, how do we
2 begin to work that into the planning process and
3 deal with the inevitable changes that we believe
4 will be coming.

5 And so let me finish off here and be a
6 bit presumptuous and make a few recommendations to
7 the state of California. Certainly we would urge
8 California to continue its strong commitment to
9 the West Coast Governor's Global Warming
10 Initiative.

11 The staff of the three states met last
12 week in Olympia with participation from the Energy
13 Commission staff and from California EPA on that.
14 We think this has been important for us, we think
15 that the three states represent the opportunity to
16 work together for some significant benefits to all
17 of our states and to the region as well.

18 And this is something that we've seen
19 that has made it through two different California
20 governors and two different governors in the state
21 of Washington. So we think that there's some
22 resilience to the kind of action and directions
23 that the three states are involved with.

24 Again, looking to California to
25 certainly maintain and enhance your efforts on

1 clean cars and energy efficiency in particular.
2 We've looked to you for the product efficiency
3 standards, we've looked to you for the vehicle
4 emissions standards, and we've often looked to
5 California as well in terms of building codes.

6 And I think you've continued to be a
7 model for many of the things that we do in the
8 Pacific Northwest, and so we would encourage you
9 to continue and strengthen those efforts.

10 And finally I'll talk about one aspect
11 that I think is becoming more and more prominent,
12 and that is I think there's a real need for the
13 west coast states to begin to signal to much of
14 the rest of the western United States that there's
15 a desire for low and no carbon electricity
16 resources.

17 The load centers are in the west coast
18 states, we will be the major markets for many of
19 those interior states, things such as the Frontier
20 Project which has been recently proposed, various
21 other discussions about the development of clean
22 coal technologies, and other kinds of technologies
23 that would be centered in the Rocky Mountain and
24 inland western areas.

25 I think it's particularly important for

1 California and the other western states to begin
2 to say we recognize that you have those
3 significant resources, but we also believe that
4 climate change is real, that carbon reductions are
5 particularly important, and that low and no carbon
6 emitting resources are of particular importance to
7 us, and that we will be willing to buy those
8 resources.

9 We will create a market for you out here
10 on the west coast, and provide some strong market
11 signals to those interior states.

12 So, I thank you for your time, I
13 appreciate the opportunity again to come down the
14 coast and visit you here in Sacramento.

15 COMMISSIONER GEESMAN: Thanks, Tony.
16 Thanks for being here and thanks for being such a
17 source of support over the last few years among
18 the three west coast states. It's been very
19 helpful to us.

20 Mr. Reilly had indicated that the UK's
21 review had identified that electricity intensive
22 industries could suffer a diminished
23 competitiveness under these policies.

24 How have you addressed that in
25 Washington state?

1 MR. USIBELLI: Well, for a variety of
2 different reasons a significant number of our
3 electricity intensive industries, particularly the
4 aluminum industry has really, almost largely
5 disappeared in the Pacific Northwest.

6 Eleven large aluminum smelters in the
7 Pacific Northwest, seven of those in Washington,
8 of that only three of them are operating at a very
9 low level. A number of factors associated with
10 that, electricity price being one of the
11 competitiveness factors.

12 And, you know, we've dealt with that a
13 bit. It was quite interesting. My understanding
14 is that one of our larger operating plants in the
15 state of Washington is Alcoa. And Alcoa has set
16 some, what I understand are some pretty
17 significant targets for greenhouse gas reductions.

18 And I believe that they are looking for
19 40 percent of their corporate-wide reductions from
20 some work at just one of their mills operating in
21 the state of Washington.

22 But we're certainly aware of it for
23 other industries as well, but I think other
24 industries are also beginning to recognize that
25 this is something that they really need to deal

1 with.

2 Weyerhaeuser for example is I believe the
3 largest single industrial consumer of electricity,
4 outside of the aluminum industry, in Washington
5 and in the Pacific Northwest. They were actively
6 involved in the climate change process that the
7 Puget Sound area put together, and supported many
8 of these kinds of things with the realization that
9 this is something that they needed to deal with.

10 COMMISSIONER GEESMAN: Thank you very
11 much.

12 COMMISSIONER BOYD: Tony, something that
13 concerns both our our states, I guess, is the
14 impacts of less snow and the change of the water
15 regime on the generation of hydro electricity,
16 which is critically important to both of our
17 states.

18 California has a sizable amount of hydro
19 electricity, and when we plot red dots too we get
20 concerned. But we tend to depend fairly heavily
21 on you for hydro electricity as well.

22 I guess I'm just saying that this is an
23 extreme concern for the three western states,
24 we've talked about it a lot.

25 What long-term discussions have you had

1 perhaps in Washington with regard to the future of
2 your electricity sector as a result of these
3 consequences? One of the concerns we have down
4 here is, while we all talk about mitigating the
5 future, what's happened in the past has happened,
6 and we're going to have to live with that and
7 adapt to it in some way.

8 And I don't think we've hardly begun to
9 discuss down here what does that mean in terms of
10 the reservoir systems we have and what have you
11 and saving the water, retaining the water in
12 different ways, and generating electricity.

13 Have you gone very far down that path in
14 Washington?

15 MR. USIBELLI: We're beginning to. The
16 Northwest Power Council, for example, has
17 commissioned several studies looking at some of
18 the impacts.

19 Probably the most immediate work that
20 they have done are the impacts related to the
21 changing snow and water regimes on salmon, and
22 their conclusions have been somewhat problematic,
23 it's a little hard to tell exactly what the
24 consequences might be, given the other sorts of
25 things.

1 But they've also looked at what are the
2 long-term consequences for the availability of
3 hydro electricity. And it is a definite and
4 significant concern.

5 The Columbia/Snake River system is
6 dominated a bit more by Canada than it is by the
7 Cascades, and as yo might have seen from there
8 they'll likely have significant declines but not
9 as significant as the Cascades.

10 So there will be impacts on that system.
11 I think it may, it likely will be substantially
12 more, and we've learned that this year with one of
13 our lowest snowfalls on record, that particularly
14 the hydro electric system that's tied to the
15 Cascades and the dams that are on the Olympic
16 Peninsula and in the Cascades are likely to see
17 major declines in the amount of hydro electricity
18 that they'll be able to produce.

19 COMMISSIONER BOYD: Unfortunately, it
20 does appear we got all your snow in California for
21 a change.

22 MR. USIBELLI: Yes, and I was hoping
23 you'd ship some of that back to us, but I guess we
24 don't have that system quite in place yet.

25 COMMISSIONER BOYD: Thank you.

1 MS. CHO: I have a question about your
2 comment that Weyerhaeuser and Alcoa realized that
3 they had to do something. Are you referring to
4 their sense that they had to do something about
5 global climate change, or how much money they're
6 spending for electricity at their plants?

7 MR. USIBELLI: Well, actually a little
8 bit of both. But in the case of Weyerhaeuser,
9 Weyerhaeuser was a participant in the stakeholders
10 process that generated the plan in terms of
11 greenhouse reductions and was a signatory to the
12 recommendations that came out of that, that
13 included adoption of the transportation standards,
14 adoption of the product efficiency standards, and
15 so forth.

16 Alcoa was not directly involved in that
17 process. But I think both of them, as
18 corporations, have recognized that climate change,
19 they need to have some significant involvement in
20 that.

21 The Weyerhaeuser representative, I
22 believe he said that they have about 100 people on
23 staff worldwide that spend significant portions or
24 all of their time dealing with what are the
25 consequences associated with climate change, what

1 are the opportunities with respect to forestry,
2 what are the costs that might be associated with
3 that as well.

4 Alcoa has been looking for ways
5 improving their process can reduce the PFC's that
6 they emit, which are extremely potent greenhouse
7 gases. So they've been looking for opportunities
8 to get some credit for doing that.

9 Both of them, in addition to that, are
10 concerned about the overall issue of electricity
11 prices in the Pacific Northwest and where they
12 position them competitively with others,
13 particularly in other parts of the world.

14 MR. DUVAIR: Okay, thank you, Tony. Our
15 final speaker, and then if we've got some time we
16 can potentially open up to the public for
17 questions or comments of panelists, but our final
18 speaker is Abby Young.

19 Abby Young is also a third member of
20 this panel that is part of the Energy Commission's
21 Climate Change Advisory Committee. Abby is the US
22 Director for the Cities For Climate Protection,
23 and she's been the Director since 1998.

24 She's been with ICLEI, the International
25 Council for Local Environmental Initiatives, since

1 1995. She's got a Masters Degree from Johns
2 Hopkins University in International Energy and
3 Environmental Policy and has some experience with
4 the state legislature, working for Assemblyman
5 Jack O'Connell.

6 MS. YOUNG: Thanks, Pierre, and thank
7 you, it's a great privilege to be here, to be able
8 to present to you.

9 My organization, the International
10 Council for Local Environmental Initiatives, is an
11 international nonprofit membership association of
12 local governments, dedicated solely to
13 environmental issues.

14 Our largest program internationally, as
15 well as in the United States, is called the Cities
16 For Climate Protection Campaign. We're working
17 with about 156 cities and counties in the US on
18 the issue of climate protection, and a good number
19 of those are in the state of California.

20 These 29 local governments, cities,
21 counties and towns in California have all made
22 significant commitments to taking action to reduce
23 greenhouse gas emissions in their communities.

24 Some of these have been doing this for
25 quite a long time. The city of Chula Vista, San

1 Jose, Berkeley have been working since the early
2 90's on very deliberate assessments of greenhouse
3 gas emissions, adopting targets and timelines for
4 reductions, and implementing programs to reduce
5 emissions.

6 So for a number of local governments
7 this is nothing new. They've been leaders on this
8 issue for more than the past decade. Some of our
9 most recent comers to this program are the County
10 of Santa Clara, and interestingly, the Marin
11 Municipal Water District. This is the first water
12 district that we're aware of in the country that's
13 actively taking on climate protection and the
14 first water district that we are working with.

15 Collectively these local governments
16 represent 28 percent of the state's population, so
17 this is a very good chunk. And for the state, in
18 thinking about how it is going to move forward in
19 achieving these aggressive targets that have been
20 laid out this is a tremendous head start.

21 And you should be relieved to know that
22 you've got so many potential colleagues in this
23 effort really waiting to work with you with open
24 arms.

25 So what are they doing, what are they

1 all committed to? Each one of those local
2 governments has made a political commitment to
3 developing a greenhouse gas emissions inventory,
4 to adopting a greenhouse gas reductions target, to
5 developing a comprehensive local climate action
6 plan quantified out so that they know if they
7 fully implement the plan they will achieve their
8 targets.

9 They are, of course, committing to
10 implementing the plan, that's the big one, and
11 monitoring and reporting their results.

12 To date, this first milestone, the
13 emissions inventory, 24 of those 29 local
14 governments have completed that stage. So you've
15 got a lot of activity at the local government
16 level in terms of assessing baseline greenhouse
17 gas emissions.

18 The second bullet point, the reduction
19 target, very political action. It doesn't cost a
20 lot to adopt a target, but it's very political.
21 Eleven of those 29 local governments have adopted
22 targets. All of them are more aggressive than
23 Kyoto. They are along the lines of 10 to 15 to 20
24 percent reductions below 1990 levels by a year in
25 the future -- it may be 2010, depending upon when

1 they began in the program, it may be later.

2 That number, that number of 11 local
3 governments, is about to ratchet up significantly
4 to 20, as the nine communities in Sonoma County
5 are just poised to collectively adopt a county-
6 wide reduction target of 25 percent below 1990
7 levels.

8 The local action plan, 10 of the local
9 governments have developed comprehensive local
10 action plans, stand alone plans, that they are in
11 the process of implementing.

12 And this is all a function of time. So
13 we're seeing more and more governments moving
14 through these milestones every year. But this is
15 very exciting, and my best advice here is to just
16 take advantage of this tremendous resource.

17 So what are they doing? I took the
18 liberty of pulling out for you just a random
19 sampling of the kinds of activities local
20 governments are taking to reduce greenhouse gas
21 emissions. None of this is anything shocking --
22 energy efficiency upgrades in municipal
23 operations, landfill gas electrification,
24 alternative fuels, transit, car pooling.

25 But these are all things local

1 governments can influence and control. Some other
2 things that we could easily put up here, I could
3 probably do 20 slides like this -- land use and
4 zoning decisions that could impact the amount of
5 time we spend in our automobiles.

6 Local governments control those levers.
7 They're the ones that enforce building codes.
8 They can also exceed, right their own building
9 codes that exceed Title 24 energy efficiency
10 standards.

11 The City of Berkeley and the City of San
12 Francisco have energy conservation ordinances that
13 are very aggressive in terms of increasing the
14 energy efficiency of the building stock.

15 There's a lot of things that local
16 governments can do and are doing to reduce
17 greenhouse gas emissions.

18 Of those 29 local governments a number
19 of them have reported to our office actions that
20 they've taken that they have quantified. We could
21 say it's the tip of the iceberg of what they're
22 actually doing, of all the panoply they're taking.

23 But just that tip of the iceberg
24 collection of policies and practices that have
25 been reported to our office are demonstrating some

1 very significant results in terms of reducing
2 greenhouse gas emissions.

3 Seven and a half million tons of
4 greenhouse gas emissions are being reduced on an
5 annual basis just from that collection of actions
6 that are being reported to our office.

7 If you were to ratchet this up --
8 remember I said that those local governments
9 represented about 28 percent of the state's
10 population -- if you were to consider this a
11 statewide penetration, if all local governments in
12 the state were to take these kinds of actions,
13 that number would be more on the line of 27
14 million tons being reduced each year.

15 And that is getting to almost 50 percent
16 of what the state's reduction target is for 2010.
17 That gives you a picture of the potential for
18 helping the state achieve its emissions reductions
19 goals that local government as a sector provide.

20 And why are they doing this? Well, you
21 can look at the other bullet points, the
22 motivations. Many of them Tony mentioned on his
23 slide, about the lack of leadership at the federal
24 level, etc., but another big reason are these co-
25 benefits.

1 \$118 million in reduced energy and fuel
2 costs. That's \$118 million that's staying in the
3 local economy, bouncing off all different kinds of
4 multipliers, and becoming a nice economic
5 development process for these local governments.

6 Reduction in electricity load, of
7 course. Reduction in criteria air pollutants that
8 are associated with all these actions, which are
9 very important to local governments when they're
10 faced with things like rising childhood asthma
11 rates, increasing ozone non-compliance days, and
12 etc.

13 So how do we move forward? There needs
14 to be -- and I have two recommendations for the
15 Commission. First, there needs to be a formal
16 mechanism to foster direct communication between
17 local governments and state agencies on the issue
18 of climate protection.

19 First, do no harm. What is the state
20 doing through its policies and practices and
21 regulations that could be impeding local
22 government efforts to achieve the kinds of
23 reductions that they're trying to achieve?

24 Additionally, what could the state be
25 doing that could assist local governments in

1 getting their climate protection activities on the
2 ground and getting them that much closer to
3 achieving their targets?

4 And then on the reverse side, what can
5 local governments be doing that can assist the
6 state in helping it reach its greenhouse gas
7 emissions reduction targets?

8 These are things that need to be vetted.
9 They need to be discussed directly between state
10 and local actors. And there needs to be a,
11 whether it's -- the state of Massachusetts
12 actually has in its state plan a climate
13 protection, what is it, a local government climate
14 protection roundtable I think is what it's called.

15 Something like that could be very useful
16 for the state of California as well.

17 A second recommendation, and I didn't
18 make a slide for this one, the single most helpful
19 thing that the state could do to help these local
20 governments realize their climate protection goals
21 is to assist them in setting up dedicated staff
22 people in their jurisdictions to focus solely on
23 coordination of their climate protection and
24 energy programs.

25 Very, very few local governments in the

1 state of California have staff people dedicated to
2 looking at energy, and even fewer to looking at
3 climate protection. This is not a huge
4 mobilization of resources. This is the kind of
5 thing that is very low cost and can be done in a
6 variety of different ways.

7 But these are two ideas on how the state
8 can use the local government sector and take
9 advantage of what they have to offer in terms of
10 helping the state achieve its climate protection
11 goals.

12 So it's a tremendous resource that's
13 available to you. I think it's good news, and I
14 really encourage you to tap that resource as you
15 continue on this big challenge. So thank you very
16 much.

17 COMMISSIONER GEESMAN: Thank you for
18 being here, Abby. And I want to heartily second
19 the conclusions that you've drawn. In the 1970's
20 local government very much were in front of state
21 government in promoting energy efficiency and
22 renewable sources of energy, and it ended up
23 serving as a real catalyst and important feedback
24 loop for state policies.

25 And I think that the same is likely to

1 occur in this area. That's a hard message for
2 Sacramento to digest, and I think it's going to
3 need repeated reinforcement by your organization
4 and other local government advocates.

5 Do you have in your office an inventory
6 of the various policy steps that the different
7 local jurisdictions have taken?

8 MS. YOUNG: We do. It's probably not
9 comprehensive because, of course, the local
10 governments themselves don't always have 100
11 percent absolute inventory of all the things
12 they're doing that reduce emissions, but we do
13 have a database of about 1,000 measures that local
14 governments are implementing. Of course those
15 aren't all in California. But I can produce that
16 for you.

17 COMMISSIONER GEESMAN: If you would make
18 it available to our docket it would prove quite
19 helpful.

20 MS. YOUNG: Absolutely.

21 COMMISSIONER GEESMAN: Thank you very
22 much.

23 MS. YOUNG: Thank you.

24 COMMISSIONER BOYD: Abby, thanks for
25 being here, and thanks for being a member of our

1 Advisory Committee. I am building on what
2 Commissioner Geesman just said. As you went
3 through your presentation I was reminded of the
4 fact you have inventory data at the local level,
5 you've done targets, you have plans, you've had
6 some successes.

7 And I'm just wondering -- this is almost
8 a question for staff for consideration -- I'm
9 wondering and hoping that we've taken into account
10 all that local government has done in formulating
11 the state goals and plans and in accounting for
12 successes against the statewide goal.

13 So hopefully, if we haven't bridged that
14 gap, we will bridge that gap in carrying out our
15 work. But it's very interesting. I agree with
16 Commissioner Geesman.

17 MS. YOUNG: The folks at the Energy
18 Commission have been very helpful to the local
19 governments in terms of providing information and
20 helping them navigate, you know, what does all
21 this energy information mean, how can they apply
22 it to their local government in doing their
23 assessments.

24 So I want to thank the Commission staff
25 as well.

1 MR. DUVAIR: Okay, I've been informed
2 that we have run a little bit over time, so the
3 public question and answer period I believe is
4 going to be after lunch, and so, hopefully we'll
5 have some panel members that are staying after
6 lunch and they may be able to field some questions
7 at the end of the day.

8 In the meantime we're going to have to
9 move on to our next panel. So I want to thank all
10 of the policy contacts panels for travelling here
11 today and for providing these great presentations.

12 COMMISSIONER GEESMAN: Thank you.

13 MR. BIRKINSHAW: Good morning,
14 Commissioners. For the record my name is Kelly
15 Birkinshaw. I manage environmental research for
16 the Energy Commission.

17 This morning for the next 45 minutes to
18 an hour we're going to talk about climate change
19 science, particularly the program here at the
20 Energy Commission.

21 Some nearly two years ago now the
22 Commission co-sponsored the creation of a climate
23 change research center here in California, the
24 primary focus of which was to develop analytical
25 tools to inform policy in three important areas.

1 First of all, impacts assessment.
2 Secondly, greenhouse gas reduction. And finally
3 on strategies for adaptation.

4 The primary core program is located at
5 Scripps Institute in San Diego, the Scripps
6 Institute of Oceanography. And secondly at UC
7 Berkeley, although we've been able to engage
8 really a number of centers of excellence across
9 the state of California, including the national
10 laboratories.

11 What we'd like to do this morning is to
12 give you an overview of our science program,
13 basically a progress report. We are set to
14 develop a five year, fairly comprehensive
15 assessment report for California.

16 This is a long-term research effort, so
17 one of the keys we'd like to accomplish this
18 morning is to talk about what are the key unknowns
19 that we need to focus on over the next several
20 budget cycles of our research program.

21 I know you've seen these pie charts
22 before. I just wanted to do one thing here, which
23 was to note that, although we talked a lot about
24 transportation, both the electricity and natural
25 gas sectors are major contributors to the overall

1 greenhouse gas inventory.

2 And so there is clearly a very strong
3 rationale for our investing in climate science,
4 using funding from the surcharge on natural gas
5 and electricity here in California.

6 Secondly, one of the other points here
7 is that there is no silver bullet. We're going to
8 have to attack a number of different sectors to
9 achieve the greenhouse gas reduction goals
10 established by the Governor just a few weeks ago.

11 Early on in the program we identified a
12 number of key what we thought were policy
13 questions, that really formed the frame of our
14 research program.

15 These are those questions. This is
16 really what's been driving our decision making on
17 research to tackle in the program. In the
18 interest of time I'm not going to go through them
19 individually but these are the issues that we
20 think are really key science questions that we can
21 tackle in the program.

22 I have three key researchers here this
23 morning to talk with you. What we'd like to do is
24 a panel discussion. What I'll do in introduce all
25 three of them now, and they can give their

1 presentations, and we can have some opportunities
2 for question.

3 The first presenter is Dr. Dan Cayan.
4 He is the Director of our climate change center at
5 Scripps Institute of Oceanography. He is also
6 currently directing the California Applications
7 Program at the NOAA Office of Global Programs, and
8 if particularly interested in attempting to
9 improve climate and extended weather forecasting
10 for the California region.

11 Our second presenter will be Dr. Lynn
12 Price. Dr. Price is a scientist and deputy group
13 leader for the international energy studies group
14 in the Energy Analysis Department, Environmental
15 Technologies Division of Lawrence Berkeley
16 National Laboratory.

17 Dr. Price is a contributing lead author
18 for a number of intergovernmental panels on
19 climate change reports, most recently lead author
20 for the industrial sector chapter in the IPCC's
21 Report Number Four.

22 And then finally we have Dr. Michael
23 Hanemann, who is directing economics and
24 adaptation research for our climate change center
25 at UC Berkeley. Dr. Hanemann is a Professor in

1 the Department of Agriculture Resource Economics
2 and Policy at UC Berkeley and has a broad range of
3 interest of energy efficiency and water, focusing
4 on energy and micro economics, environmental
5 economics, and policy.

6 And so with that I'd like to now turn it
7 over to Dan Cayan, followed by Dr. Price and Dr.
8 Hanemann. Thank you.

9 MR. CAYAN: Thanks, Kelly, and glad to
10 be here. Time is precious, so let me try to zip
11 through this. One of us has a plane to catch.

12 I think it's important to note that
13 California is of course a large region, but we
14 depend on really the global climate engine for our
15 climate mix.

16 And consequently the activities that you
17 see here very importantly are instigated by the
18 funding through the PIER program of the Energy
19 Commission, but we're leveraging funding and
20 support really from federal and from global
21 resources, and that's a primary aspect of this
22 work that needs to be sustained.

23 Just as a backdrop, all of this climate
24 change that we're looking at is taking place, of
25 course, in the midst of a rather impressive

1 increase in population that's happened in
2 California since World War II, and is projected to
3 continue.

4 The California population increase which
5 is indicated here by the bar graph, actually more
6 closely mirrors the global population increase
7 than it does the national. And I'm going to skip
8 details on here, but trust me in just pointing out
9 those remarks.

10 Another point to be made is that the
11 population increases that will occur in the next
12 decades, probably doubling by mid-century, are
13 going to take place not in relatively mild coastal
14 areas but in probably more energy demanding
15 interior areas of California.

16 So that's a topic of concern, and that's
17 one that Michael and colleagues are working on
18 together with climate projections.

19 One of the themes here is the necessity
20 for multi-disciplinary experts, such as you see on
21 this panel, to tackle this problem. This is not a
22 problem that will be solved by any of our
23 disciplinary specialists alone, it's going to
24 require a convergence of the intellectual
25 resources in California as well as government

1 agencies and agency scientists and staff people to
2 work on.

3 This chart is a depiction of global
4 temperature. You saw this earlier in another
5 format, but this is global temperature as best we
6 can make if from observations. That's the solid
7 dark line on this picture.

8 But along with that we're indicating
9 here what state-of-the-art climate models are able
10 to do in replicating the global change in
11 temperature. The red envelope is a set of climate
12 model runs that have been run by all of the known
13 forcings, natural and anthropogenic, human caused.

14 And the blue envelope is the one in
15 which the climate model is forced purely by
16 natural forcings.

17 The message here is A, climate models do
18 a credible job of replicating previous climate,
19 going back a century or so. And secondly, that
20 natural forcings of course can't account for the
21 recent rise in temperatures globally that we've
22 seen over the last three or four decades.

23 Human caused greenhouse gases are
24 responsible for those increased rates of change
25 and temperature.

1 The west, and California in particular,
2 are vulnerable to this. We saw some of this being
3 alluded to from our representative from the state
4 of Washington. This map is a color coded format
5 which shows the percent of precipitation that
6 occurs between -3 degrees and 0 celsius over the
7 landscape of the United States.

8 And of course 3 degrees celsius is kind
9 of a likely range of climate increase over the
10 next 100 years of so. The inset at the tope is a
11 swarm of climate model runs that have been
12 extracted for northern California, showing that 3
13 degrees celsius is probably kind of a modest
14 projected increase.

15 But the point here is that getting to
16 the rain and snow problem, where snow of course is
17 an important natural resource for us for more than
18 one reason, we just heard that, we are
19 particularly vulnerable in California to climate
20 changes and the change that it will have on
21 changing snow today to rain tomorrow.

22 This is a California version of what you
23 saw for the Pacific Northwest, indicating that as
24 climate warming proceeds the snowpack that we
25 accrue over the state of California is likely to

1 be depleted by at least 30 percent by mid-century
2 and probably 50 percent or so by the end of the
3 century.

4 I should point out that this is a rather
5 conservative rate of change of temperature in this
6 hydrological model simulation, and recent
7 simulations have estimated that we could be liable
8 to lose considerably more of our springtime
9 snowpack than is shown here.

10 One of the points to be made in this
11 gathering is the fact that, really this is going
12 to take a long-term effort to grapple and solve
13 these problems. We're facing still a set of
14 uncertainties, from models to greenhouse
15 emissions, an observational system in California
16 which is good but less than adequate for revealing
17 changes and understanding how they're happening.

18 And also a really some gaps in
19 fundamental physical understanding that really
20 haven't made it into the modeling ingredients yet.

21 Climate emissions of course are
22 prescribed according to social and economic
23 scenarios. This is a set of them that are being
24 exercised in the latest IPCC experiments.

25 The higher rates of CO2 emissions, which

1 are shown here, from about now through the end of
2 the 21st century, would result in the carbon
3 dioxide content in the atmosphere tripling from
4 pre-industrial levels.

5 But the insidious thing about greenhouse
6 gases and CO2 is the fact that they have long
7 residence times in the atmosphere, so the actions
8 that have been taken or not taken today have a
9 great consequence on the CO2 bank account that's
10 stored in the atmosphere.

11 Even the lowest projections on this
12 chart would probably result in about a doubling of
13 CO2 by the end of the century.

14 This of course has profound consequences
15 on our climate. The top chart here is that swarm
16 of temperature projections taken from relatively
17 recent climate models, there are six of them
18 represented here, and there's five different
19 emission scenarios.

20 You can see that the likely consequence
21 of this would range from a couple of degrees
22 celsius increase, which is still a lot, to perhaps
23 eight degrees celsius, or maybe even a little more
24 annual temperature rises over northern California.

25 Another message is that there are

1 certain aspects of the climate that we feel more
2 confident, about in terms of predicting, than
3 others. Temperature, we're quite sure, that we'll
4 see warmings significantly over the next century.

5 Precipitation, which is shown at the
6 bottom, is much less clear. And we have estimates
7 that range from drying to wetting over the next
8 century, with a lot of natural variability. So
9 that's an area of concern that will need
10 clarification and indeed I think will be debated
11 over the rest of my career at least.

12 Sea level rise, of course, is a huge
13 issue, not only for Great Britain but for
14 California. And this shows a collection of
15 different model estimates of sea level rise over
16 the next century.

17 There's a lot of elements of this that
18 have not gotten into climate models. Our
19 observational database in the state is largely
20 concentrated in low elevations, where most of the
21 populace lives. Many of the processes and
22 resources that we're concerned about are at high
23 elevations, and we need to put more attention to
24 that.

25 This is, Frank Gehrke of the state

1 Department of Water Resources, from last week
2 we're installing more high elevations censors,
3 this is in Yosemite Park.

4 We need to improve not only our ground
5 base but remote sense capability of monitoring the
6 environment. This is work by Danny Rosenfeld and
7 colleagues to understand how the aerosol loading
8 air pollution possibly impacts the precipitation
9 process and the size of cloud droplets, which
10 impact how much rain we get over the California
11 mountain ranges, occurs in California.

12 And here the message is that the Los
13 Angeles area is producing what appears to be a
14 significant effect on precipitation. So I'm going
15 to scamper off and let Lynn take over and --
16 Michael, because he's got to catch his plane.
17 Michael Hanemann, Berkeley.

18 MR. HANEMANN: Commissioners and ladies
19 and gentlemen, I apologize for the inconvenience.
20 I'm on my way to a DOE advisory committee meeting
21 in Washington, and I have a flight at 2:00.

22 Let me say how delighted I am to be
23 here. And I represent, as Dan does, the work of
24 many colleagues. This is very much a group
25 effort, and what we have in common is that this

1 work has been made possible by the support of
2 PIER.

3 At Berkeley we are leveraging research
4 that was ongoing in a variety of parts of the
5 campus and the College of Natural Resources and
6 the School of Public Policy, where I have my
7 affiliations in the College of Environmental
8 Engineering and in the city regional planning and
9 the GN resource group, and now most recently in
10 the law school.

11 So we're pulling together researchers
12 who's work is relevant for these issues, but many
13 of them haven't focused on climate change until
14 recently. And we're developing a shared set of
15 assumptions, a shared framework, and we're
16 developing a series of analytical tools to look at
17 these issues.

18 As you know, we're working on the report
19 that the Governor has called for and that will be
20 presented next January, and my own view is this is
21 in a way a mid-course assessment of the longer run
22 PIER program research that we've been doing,
23 stepping back and taking stock of what we know at
24 this point and what we don't know, and what needs
25 to be filled in to come up with a more complete

1 assessment.

2 The Berkeley approach involves detailed
3 studies of certain individual sectors -- water,
4 agriculture, forestry, energy and coastal
5 resources. Looking at physical impacts, social
6 impacts, and economic impacts, and then stepping
7 back and tying these together to look at the
8 overall effect on the California economy.

9 And to look at both in terms of
10 policies, to look at adaptation policies in
11 individual sectors but to look at statewide
12 policies of the sort Ned Helme and others have
13 talked about to reduce greenhouse gas emissions.

14 So we are going at a sectoral level and
15 also trying to pull this together economy-wide.

16 Water, which has been mentioned for
17 Washington and for all of us on the west coast, is
18 really the most critical issue.

19 Let me just make one observation. Dan
20 said correctly that, while there's considerable
21 consensus on warming and temperature increase,
22 there's much less agreement among models with
23 regard to precipitation.

24 What I want to say, based on the current
25 research, is that from the economic perspective,

1 precipitation is much less important than
2 temperature, because if there is -- let me
3 elaborate.

4 The key statistic that you need to keep
5 in mind is that something like 75 percent of all
6 water use in California occurs between April and
7 September. The precipitation, weather it increase
8 or decreases, occurs in the winter.

9 Water is not a scarce resource in the
10 winter. Having 50 percent more water in the winter
11 has almost zero economic value. Now, if it can be
12 stored and carried over to the summer it does have
13 economic value but that costs money and resources.

14 My point is having extra water in the
15 winter, by itself, is of no value. It can be made
16 valuable by the expenditure of money associated
17 with storage. But we already have more water than
18 we are using in the winter, so there is an
19 enormous asymmetry.

20 The uncertainty, in short, in the
21 modeling of precipitation, from an economic point
22 of view, is really I'd say an order of magnitude
23 less important than uncertainty or certainty about
24 temperature.

25 Some of the latest models suggest that

1 there's a sharp difference between summer
2 temperatures and winter temperatures. It's been
3 known for a long time that it was getting warmer
4 in the winter, so there's some indications that it
5 might get even warmer in the summer.

6 And that, if I can go to the last bullet
7 point here, the result is really a very complex
8 interaction. Our water comes in the winter, it's
9 stored for use in the summer, it's stored for use
10 by agriculture, it's stored for use by the cities,
11 it's stored for hydropower generation, which is
12 the most valuable hydropower generation is in the
13 summer.

14 But when it's stored in the winter and
15 the early spring you have to leave space for flood
16 storage. If we get more runoff in February and
17 March as opposed to April and May that we get now
18 there's still a need to leave space for flood
19 storage.

20 The net effect is that, without any new
21 storage, we will capture a smaller fraction of the
22 precipitation than we are capturing now.

23 Some other factors that affect water
24 supply, the Delta, increased evaporation from
25 reservoirs, possibly siltation of watersheds

1 associated with fire, the Colorado Basin is likely
2 to be affected in a manner that's similar to the
3 Pacific Northwest.

4 All of these factors complicate our
5 water supply and are likely to reduce our
6 effective water supply without additional
7 expenditures. Those expenditures would be part of
8 an adaptation policy that we'll need to adopt and
9 can adopt, but there will be economic costs.

10 On the other hand, the demand for water
11 will grow, both in agriculture and in urban areas,
12 because of increased need for outdoor watering
13 with the hotter temperature.

14 There's also some evidence which we're
15 looking at that climate change may increase pest
16 populations and also agricultural yields. It's
17 true for many crops that if you go from a cold
18 temperature to a somewhat warmer one the yields
19 are increased. But the general belief is that
20 this is an inverse U shape, and if you get a lot
21 warmer it's harmful both for the quantity and for
22 the quality of the agricultural products and we're
23 exploring that.

24 We're looking at forestry, I'm going to
25 skip through some of the others. Energy is

1 complicated because there's a reduced energy
2 production because of hydropower impacts and
3 there's likely to be increased demand for energy,
4 both for residential cooling in urban areas and
5 increased groundwater pumping.

6 This nexus, energy is likely to be the
7 second most crucial sector, after water. We're
8 looking at impacts on coastal resources.

9 Let me just end up with a couple of
10 observations. To pull these individual sectoral
11 analyses together we're developing a statewide
12 economic model which is very much a state-of-the-
13 art, what's called a general equilibrium model,
14 with considerable sectoral details, so that we can
15 look at effects on individual sectors and the
16 important thing is that some sectors will be hurt,
17 others will benefit, and so the disaggregation is
18 crucial.

19 I should mention that for now the model
20 looks at California as a single area. In future
21 work, not this year but starting next year, we'd
22 like to disaggregate this spatially so we can do
23 economic analysis with southern California and the
24 central valley and northern California.

25 We're using the model not only to look

1 at impacts but to look at a variety of policy
2 issues, policies to reduce greenhouse gas
3 emissions in various ways, whether portfolio
4 standards, energy efficiency standards, a cap and
5 trade scheme.

6 Let me just end, if I may, by making a
7 couple of observations. First of all, with water,
8 with energy, with several other sectors, the
9 effects are going to be intricate in terms of
10 timing and location.

11 What we are doing now is a first cut,
12 because we're still developing the models. The
13 details with all of these things will matter, the
14 details of timing, the details of space. And so
15 we will need to refine the analysis beyond what we
16 can pull together this fall to verify the details,
17 to bring in less crude, more detailed physical
18 models, process based models, so that we can come
19 up with more firmly based conclusions.

20 The last point I want to make is the
21 need for integration. And let me just
22 characterize it this way. It seems to me that
23 climate change was viewed as a scientific issue
24 that was important, but a matter of longer run
25 research and of more basic science.

1 Because of events which have been
2 discussed by earlier speakers climate change is
3 now moving to a matter of direct relevance for
4 current policy in California and I think in the
5 US.

6 That really is putting a different
7 perspective on things. And I think it's necessary
8 for us to strengthen the bridges between those of
9 us who are coming at it from the climate side and
10 others who are looking at energy policy more
11 broadly and economic policy in the state more
12 broadly.

13 I think it's important therefore to
14 focus on the integration. I want to mention one
15 example. At this point the governor's study on
16 climate impacts doesn't contain energy as one of
17 the sectors.

18 It has agriculture, forestry, coastal
19 resources, water. But I think energy is
20 sufficiently broad, as is water, that it really
21 needs to be up there.

22 I think this is something where the
23 Energy Commission should take a leadership role
24 and take command of this, and I think in addition
25 to the climate change sector and the Integrated

1 Energy Report I think there really needs to be a
2 discussion and an accounting in the form of a
3 chapter in the Governor's impact report on energy.

4 And I think we need to build the
5 bridges, so let me just end with an example. And
6 Ned Helme's very interesting work with the NIMS
7 model, I think it would be wonderful if we could
8 talk with him and get his code.

9 We have got detailed analysis on hydro
10 power, we've got more detailed information on
11 ground water. These things need to be brought
12 together, and there's still a degree of
13 fragmentation, different groups of researchers
14 viewing this as a climate problem, viewing this as
15 an energy problem.

16 The bottom line is I think this is going
17 to be a problem for all of us in California and
18 for all aspects of the state. Thank you.

19 MS. PRICE: Good morning. I'm very
20 pleased to be here, to have the opportunity to
21 talk to you about the mitigation research that's
22 going on in California. I've worked on some of
23 the projects that I'll be describing and I am also
24 representing some colleagues from other
25 organizations that have done some of these

1 mitigation studies.

2 The policy problem that we're
3 addressing, that PIER is addressing, with these
4 number of mitigation studies that are happening in
5 the state is to determine the optimum mix of
6 greenhouse gas reduction strategies.

7 What are the best mitigation options
8 that can be pursued in this state, and the needs
9 research on both the emission sources and their
10 characteristics, emissions trends in the state,
11 and a good understanding of what is happening in
12 the state, as well as research on the cost of
13 these abatement measures and the potential
14 abatement that can come from different measures.

15 So this is the policy problem that's
16 being addressed by the PIER sponsored research.

17 This slide shows a number of greenhouse
18 gas mitigation studies that have been completed
19 through the PIER program.

20 And the first one is one that we did at
21 Lawrence Berkeley National Lab, development of
22 energy balances for the state and energy balance
23 is an accounting mechanism that shows all of the
24 energy coming in to the state and produced in the
25 state, accounts for the transformation and use of

1 this energy, and then in the end shows the
2 different end use sectors and how the energy was
3 used by these sectors. I'll describe this a
4 little bit more later in this talk.

5 Another study done at Lawrence Berkeley
6 National Laboratory is a review of the life cycle
7 emissions associated with 50 different products
8 that are manufactured in California. And we did
9 case studies on two of those products, cement and
10 personal computers.

11 ICF Consulting has done a study on
12 emission reduction opportunities for non-CO2
13 greenhouse gases, and some of that information was
14 presented earlier by Ned Helme.

15 Winrock has done a study on carbon
16 supply from changes in management of forest range
17 and agricultural lands and that's looking at
18 things like lengthening the timber rotation,
19 afforestation of range lands, and conservation
20 tillage practices.

21 And there's also been a research roadmap
22 designed for greenhouse gas inventory methods to
23 inform the state in doing its greenhouse gas
24 inventory, as well as to set up guidelines for
25 future research to improve the state's greenhouse

1 gas inventory.

2 This next slide shows a number of
3 studies that are ongoing, PIER sponsored studies
4 that are ongoing.

5 The first one relates to west carb, and
6 west carb is california Energy Commission and DOE
7 joint effort to look at carbon sequestration
8 options, both terrestrial options and geologic
9 options, that would be available for the west
10 coast states.

11 It has two phases. The first phase is
12 characterizing these options, and that phase is
13 just about complete. And the second phase is to
14 move in to some pilot studies to do some more
15 site-specific measurements and analysis of these
16 terrestrial and geological sequestration options.

17 The University of California at Davis is
18 doing an assessment of carbon sequestration
19 potential from California agricultural soils.
20 Depending on how soils are used, what crops are
21 grown on these soils, sometimes they can be sinks,
22 that is, they can sequester carbons, sometimes
23 they can be sources of carbon.

24 So this study is looking at the
25 different uses of California soils. This

1 consortium of different researchers are also
2 looking at developing a new model for estimating
3 emissions from California dairy.

4 And finally an effort that's just about
5 to start is to look at long-term energy efficiency
6 supply curves. This is an effort that Quantum
7 Engineering, Lawrence Berkeley Lab and University
8 of California at Berkeley will be undergoing in
9 order to augment the research being done by the
10 utilities on more near-term energy conservation
11 supply curves.

12 COMMISSIONER GEESMAN: That's likely to
13 be focused on electricity and natural gas use?

14 MS. PRICE: Yes.

15 COMMISSIONER GEESMAN: As opposed to
16 transportation related --?

17 MS. PRICE: Yes. Some of the common
18 characteristics of all of this PIER climate
19 mitigation research is they're directed toward two
20 main goals.

21 One is to improve the understanding of
22 California greenhouse gas emissions and the
23 emission trends in the state, and the second is to
24 understand the California specific mitigation
25 options and their costs and their potentials.

1 Another common characteristic is there's
2 strong involvement of other state and often
3 federal agencies in these research projects. This
4 involvement includes sometimes co-funding but also
5 in kind donations of people's time and sometimes
6 even their equipment, their research, their
7 reports, etc.

8 And some examples are listed here, like
9 the California Department of Forestry, and as I
10 already mentioned the US Department of Energy is
11 working together on the carbon sequestration
12 research.

13 Another common characteristic is that
14 these PIER reports are already being widely used
15 by others. We have seen that a number of the
16 reports, including the California Energy Balance
17 Report, was used by the California Energy
18 Commission to develop the most recent greenhouse
19 gas inventory.

20 The California Climate Action Registry
21 used some of the PIER-based reports in developing
22 their forestry reporting protocol, and
23 organizations like Tellus and the Center for Clean
24 Air Policy have used their reports in doing some
25 of their analysis of policy options, and we heard

1 a lot of that this morning from Ned Helme.

2 As I mentioned, one of the first goals
3 is to understand California's greenhouse gas
4 emissions and the trends in these emissions.

5 The Commission has just released the
6 2002 greenhouse gas inventory, and this is a bar
7 chart showing the breakdown of emissions by fuel
8 source for the state of California in 2002, and
9 you can see fossil fuel combustion is clearly the
10 largest source of emissions.

11 But there are a number of other non-CO2
12 related emissions sources, all of which are
13 important to understand, to be able to inventory
14 correctly and to be able to understand the
15 mitigation options and costs, because even though
16 fossil fuel combustion represents over 80 percent
17 of the emissions the other gases have higher
18 global warming potential than CO2 and are also
19 very important in terms of mitigating the effects
20 of climate change.

21 In terms of understanding the greenhouse
22 gas emissions, I mentioned that Lawrence Berkeley
23 Laboratories developed an energy balance for the
24 state of California. We used the energy balance
25 model developed by the International Energy

1 Administration Agency, IEA, in Paris.

2 They do energy balances for all the
3 nations of the world, and we treated California as
4 a nation and did the exact same flows of energy
5 and used the same methodology as the IEA and
6 treated California similar to a country.

7 And this model provides detailed
8 understanding of the fossil fuel combustion, CO2
9 emissions in the state by fuel type, natural gas
10 and petroleum especially. There's a little bit of
11 coal consumed in the state and that's accounted
12 for in the model.

13 And it also --

14 COMMISSIONER GEESMAN: But as a
15 consequence you don't account for electricity
16 consumed in the state from coal combusted outside
17 the state?

18 MS. PRICE: We both included and
19 excluded.

20 COMMISSIONER GEESMAN: Okay.

21 MS. PRICE: It can be accounted either
22 way. This is a software tool and you can query
23 it.

24 COMMISSIONER GEESMAN: Okay.

25 MS. PRICE: And then we allocated by

1 economic sector. I'll show you a flow chart.

2 It's very hard to see, I'm sure, but the way these
3 balances work -- on the left hand side, these are
4 the inputs, including imports and sources of
5 energy produced in the state.

6 The graph tracks how they're used and
7 how they flow and how they're transformed across
8 the graphic, and in the end it accounts for where
9 they're used. You can see at the top that's
10 residential and services, that's like commercial
11 buildings, and then the industrial sector, etc.

12 And I won't go through this in detail,
13 but this type of energy flow is then converted
14 using emissions factors such as CO2 and, you know,
15 it informs the inventory for the state of
16 California.

17 As a result of this work and the other
18 work there are still a number of ongoing research
19 and data needs in order to both improve the
20 understanding of California's greenhouse gas
21 emissions and trends as well as to understand
22 California's specific mitigation options and
23 costs.

24 In terms of CO2 emissions there's a need
25 to improve the accounting for liquid fuels. The

1 natural gas and the electricity reporting is quite
2 good, but the liquid fuels, there's a number of
3 uncertainties. And one of those is related to
4 bunker fuels.

5 Bunker fuels are the fuels used by
6 marine vessels and air fleets to transport goods
7 and services within California and in and out of
8 California, and it's very important to get a good
9 handle on those fuels.

10 We've seen a lot of jumpiness in the
11 data that are provided by the US Energy
12 Information Administration, and we would like to
13 reduce the uncertainty there, mainly because,
14 according to IPCC guidelines those flights that go
15 outside of California that are "international",
16 the emissions can be eliminated from the state
17 inventory.

18 And so having a very careful assessment
19 of these fuels and their use within the state is
20 important. Within our Energy Balances Report we
21 did devise a methodology for allocating these
22 emissions but really it would be much better if
23 there were some more data collection done on these
24 fuels.

25 I won't go in to detail on some of the

1 other needs regarding CO2 emissions other than
2 what has already been mentioned is the electricity
3 sector. A lot of electricity is imported in this
4 state and its' important to understand what fuels
5 are used to make that imported electricity so that
6 we have the correct emissions factors to use.

7 And that's an ongoing research project.
8 I know a number of different groups that are
9 working on that, I know the Climate Action
10 Registry and a number of the utilities themselves
11 are looking at what are the emissions factors and
12 we're also involved in that effort.

13 Final, in terms of understanding
14 California emissions and trends related to CO2 we
15 are collecting activity data in order to do some
16 decomposition studies. And that means we're going
17 to look at energy use per capita, per unit of
18 state GSP, which has been done, but also in more
19 detail, looking at electricity use by floor space
20 and type of vehicles, to try to break out where
21 emissions are growing, where potential savings can
22 occur.

23 In terms of understanding California's
24 specific mitigation options and costs for CO2
25 emissions, as I mentioned there's a new effort to

1 develop long-term energy efficiency supply curves.
2 We're talking about a 20 to 30 year horizon in
3 these curves.

4 And there's also an effort out of
5 Lawrence Livermore Laboratory to look at long-term
6 alternative energy pathways for California. This
7 is focusing on the transportation sector
8 initially, to start with, and they're looking at
9 hydrogen fuels, hybrid cars, etc.

10 Moving to non-CO2 emissions, as with the
11 CO2 there are data needs in terms of understanding
12 the emissions and the trends as well as
13 understanding the mitigation options and costs.

14 A kind of an underlying theme is
15 reducing high levels of uncertainty with existing
16 methods. There are a number of default methods
17 from the IPCC or from the US EPA that provide
18 emission factors for calculating emissions.

19 And often these emission factors
20 methodology could use some improvement, especially
21 if California-specific measurements and projects
22 would be undertaken to refine the methodology, to
23 refine the emissions factors.

24 One example I can give you is around
25 landfill methane. Apparently in the Netherlands

1 they decided to test the emissions factor approach
2 and compare it to actually monitoring and
3 measuring from their landfills.

4 And they measured ten landfills which
5 represented 80 percent of their landfill methane
6 emissions, and found that there were significant
7 differences between the measured amounts and what
8 they would have calculated using the emissions
9 factors.

10 And they've decided now to just measure
11 those emission instead of using emission factors,
12 and that was based on their study there.

13 COMMISSIONER GEESMAN: Do you know if
14 their landfills are comparable size or dimension
15 to those that we have in California?

16 MS. PRICE: I'm sorry, I don't know.
17 But I could find out for you, if you like.

18 In any case there's a list here of other
19 areas where improved data and inventory methods
20 would significantly help in our understanding of
21 emissions trends for non-CO2 gases.

22 In terms of understanding California's
23 specific mitigation options and costs there has
24 been a supply curve made for these non-CO2 gases,
25 but it's really been based on experience at the

1 national level, and once again doing some state
2 level studies.

3 It could provide much better information
4 about the specific conditions in California and
5 the specific cost and potentials available in the
6 state.

7 And the studies to date have not
8 included N2O from fertilizer applications, so
9 that's another non-CO2 mitigation opportunity that
10 should be evaluated.

11 Finally, looking at carbon
12 sequestration, both terrestrial and geological,
13 again there's data needs in terms of agricultural
14 management practices. Some of the research to
15 date has generalized from national level trends to
16 California trends and it would be good to collect
17 some more detailed information on fertilizer use
18 and tillage practices in California for example.

19 There's a need to improve modeling of
20 carbon nitrogen dynamics. When you change things
21 in the land use realm and you change farm
22 management practices for example, there's a pretty
23 complex inter-relationship in these dynamics, and
24 so the modeling needs to be improved.

25 And in terms of understanding the

1 mitigation options, again, the need to assess some
2 specific areas like the mitigation of catastrophic
3 forest fires. I understand there was discussion
4 yesterday about the cost and potentials and the
5 option of thinning forests, and this is something
6 that needs to be looked at in more detail.

7 And so a couple of pilot studies to
8 focus on California-specific emissions have begun
9 in this phase two of the west carb project. And
10 one is to inject CO2 into a gas reservoir in
11 California, and another is to look at CO2 storage
12 from afforestation and forest fire mitigation by
13 the fuel renewable process.

14 So in summary, I know this was a quick
15 review of the research that's going on and the
16 data needs and the need to refine some of the
17 methods and methodologies, but in general in order
18 to really clearly understand the emissions in
19 California there is still work to be done to
20 improve on the inventory, the annual inventory, to
21 have a good handle on what are these emissions and
22 what are the emissions trends and what's driving
23 these trends.

24 And there's also work to be done to
25 refine the estimates of the potential and the

1 costs associated with all these various mitigation
2 options available for CO2, non-CO2 and for carbon
3 sequestration.

4 Thank you very much.

5 COMMISSIONER GEESMAN: Thank you.

6 MR. BIRKINSHAW: That concludes our
7 presentation. I know it's late. Are there any
8 questions for our presenters?

9 COMMISSIONER BOYD: None from me, thank
10 you. I've followed this pretty closely.

11 COMMISSIONER GEESMAN: Thank you. Why
12 don't we take a lunch break now. Kelly, is it
13 okay if we don't come back until 2:00?

14 MR. BIRKINSHAW: I'm actually not the
15 one to ask here. Susan is the one -- oh, she's
16 not here.

17 COMMISSIONER GEESMAN: It's okay then.
18 We'll be back at 2:00.

19 (Off the record.)

20 COMMISSIONER GEESMAN: We're back on the
21 record.

22 MR. OLSON: Good afternoon,
23 Commissioners. The afternoon session here
24 continues the morning discussion on climate change
25 issues.

1 We asked a group of industry and
2 technology specialists to join us this afternoon
3 to give us their insights on a number of different
4 things, some of which are what are you doing in
5 your industry sector in your individual company to
6 achieve greenhouse gas emission reductions, what
7 do you see potentially in the future, and is there
8 any potential replication in your industry area.

9 Of course we're also interested in your
10 recommendations to the Energy Commission on any
11 kind of initiative or proposed action that could
12 be taken in the state of California or that we can
13 advocate at a federal level or international level
14 to go forward with additional reductions.

15 So the first speaker I'd like to
16 introduce is Robert Parkhurst, Global Environment
17 Program Manager for Hewlett-Packard Corporation,
18 and also the co-chair of the Environment Committee
19 of the Silicon Valley Leadership Group.

20 For those of you who were here
21 yesterday, he also is the co-chair of the industry
22 subcommittee of the Energy Commission's Climate
23 Change Advisory Committee. So please welcome
24 Robert Parkhurst.

25 MR. PARKHURST: Thank you, Tim, for the

1 opportunity to talk today, and thank you for the
2 opportunity to talk to you, Commissioners.

3 I'll tell you a little bit about the
4 Silicon Valley Leadership Group to get started.
5 SVLG was founded back in 1977 by one of HP's
6 founders, David Packard.

7 It currently represents more than 190
8 companies, employing more than 250,000 people in
9 the greater Silicon Valley. You can see a list of
10 some of the more notable companies there. There's
11 a wide variety, including Bank of America, Ernst
12 and Young, Intel, Goodwill, Kaiser, NBC11, our
13 friends at PG&E, SBC, Stanford University, and
14 United Defense.

15 One of the things to note about a lot of
16 these companies is that, for all but a handful of
17 them, their greenhouse gas emissions come
18 primarily from their energy use consumption. We
19 don't have exact numbers on that, but it's
20 somewhere around the neighborhood of 75 to 85
21 percent of their emissions come from energy use.

22 It's easy to say right now that we are
23 in a very competitive landscape, and that costs
24 are becoming more and more squeezed at these
25 companies, and so companies recognize that climate

1 change is an expense, primarily by the use of
2 energy.

3 And so anytime that you can reduce your
4 costs of energy you can have a competitive
5 advantage. And many of the companies that are in
6 the Valley are leaders at doing this.

7 I'll tell you a little bit about what
8 some of those companies are doing. Sixty-five are
9 part of the Flex Your Power Program. Seventeen
10 are a part of Sustainable Silicon Valley. This
11 was an outgrowth of Cal EPA's looking at trying to
12 apply a management system model on a geographic
13 area.

14 And they had a goal out there of
15 reducing climate change by 20 percent by 2010 for
16 that region.

17 Eleven of those companies are members of
18 the Business Roundtable's Climate Resolve Program.
19 Ten are members of EPA's Climate Leaders. Nine
20 are part of a memorandum of understanding with EPA
21 on reduction of perfluorocarbons. That's a goal
22 to reduce perfluorocarbon use ten percent below
23 1995 levels by 2010, and currently they're well on
24 their way to that.

25 Six are members of Pew's Business and

1 Environmental Leadership Council. Three are
2 members of the Registry. Two of them signed a
3 letter to the G8 that Nancy mentioned this
4 morning. There were actually a total of 22
5 companies that signed that, two of them are
6 headquartered in Silicon Valley.

7 Some of the things that were in that G8
8 letter I'd like to highlight. Talking about long-
9 term policy frameworks, looking out to 2030 and
10 potentially 2050 wherever possible. So the
11 Governor's goals fit very well in line with that.

12 Looking at climate stabilization
13 targets, looking at potential adaptation and
14 performance based standards. And they even
15 mentioned something about cap and trade in there,
16 which is a very topical subject for many people.

17 Some of the things I'd like to highlight
18 on cap and trade with respect to that is that they
19 wanted something that was adjustable over time,
20 preferably something at the national or global
21 level or that's linked at the global level.

22 And part of an overall agenda that looks
23 at things, not just climate change but poverty,
24 energy use, and economic challenges, and includes
25 many of the developing countries as well as the

1 developed countries.

2 Finally, there are companies that are
3 participating in the Chicago Climate Exchange and
4 the World Economic Forums Registry.

5 Just recently the leadership group
6 finalized some guiding principles around climate
7 change, and those are what I'd like to spend most
8 of my time talking to you about today.

9 These match very well with CCAP's
10 recommendations that were discussed this morning
11 around technology incentives and removal of
12 barriers.

13 The three main principles are
14 conservation, energy efficiency, and low GHG
15 generation.

16 From a conservation standpoint, looking
17 at promoting incentives beyond the building codes.
18 Things such as the green building work, or PG&E's
19 savings by design program.

20 Supporting public and corporate
21 awareness, such as what's currently going on with
22 the Flex Your Power Program. We're thrilled to
23 see Governor Schwarzenegger get behind that.

24 And then finally, a measurement tool,
25 being able to have real time and sub-panel

1 metering, so you really know what your energy use
2 is over time so you can reduce that.

3 Second is energy efficiency. There was
4 a 2002 Energy Foundation report that said there
5 may be as much as 96,000 gigawatt hours worth of
6 efficiency reductions in the state of California.
7 We think there's a huge opportunity here.

8 And some of the ways to do that is
9 through utility incentive and rebate programs, or
10 programs like PG&E's standard performance
11 contracts.

12 Encourage technologies to reduce load at
13 both peak and non-peak periods, such as changing
14 things out from simple T-12's to T-8's or T-5's.

15 Support building codes and appliance
16 standards so that new energy efficient technology
17 is adopted, and support research and development
18 that looks for the next generation of efficiency
19 in products and services.

20 Programs like the Energy Star program,
21 which has been incredibly successful at these last
22 two points. Many companies have a wide variety of
23 products that are Energy Star certified.

24 And then finally streamline the process
25 for getting the incentives to make sure the funds

1 are readily available and timely and can be
2 anticipated. Sometimes there's some challenges
3 with that.

4 I'd like to talk about load GHG
5 generation. First thing is looking at R&D, what
6 is the next generation of technology that we can
7 see, what's the breakthrough technology
8 potentially in solar, what technology could there
9 be in combined cycle gasification of coal or any
10 of the other new technologies that are coming out
11 there.

12 When looking at bringing on new
13 technologies, looking at bringing on the cleanest
14 forms of technology first, looking not only from
15 the power side but looking at transmission and
16 distribution as well.

17 And then looking at onsite
18 opportunities, such as combined heat and power,
19 solar and wind.

20 When looking at many of these items, in
21 particular co-generation or onsite generation
22 solutions, we've got to look at reducing some of
23 the institutional barriers, such as one-time
24 connection fees or other areas that currently
25 discourage the broader adoption of onsite

1 generation.

2 Looking at areas where you can reduce
3 peak demand, because that's when we have the most
4 risks, that's when we have the dirtiest power
5 online, so those are the areas where we should
6 focus the most attention.

7 And then finally permit streamlining, so
8 that when you go to look at these projects you can
9 adopt them as quickly as possible.

10 Thank you very much.

11 MR. OLSON: Okay, our next speaker. On
12 our original agenda we had Allen Dussault with
13 Sustainable Conservation. He could not make it
14 here today and his substitute is one of his
15 partners, Ken Krich, who is the Project Manager
16 with the same organization.

17 It's a nonprofit organization based in
18 San Francisco that's involved in development of
19 methane recovery and bioenergy projects, and we're
20 asking him to make comments on methane recovery.
21 So, Ken Krich.

22 MR. KRICH: Hello, I apologize, no
23 overheads, I'm a last minute substitution.

24 Methane, of course, comes from the
25 anaerobic decomposition of organic waste products,

1 and in California it's about six percent of the
2 inventory coming from landfill gas, from manure,
3 and also from enteric fermentation, the actual
4 digestive process of the cow, they belch the
5 methane in large quantities.

6 The cow produces every day about 50
7 pounds of milk, about 120 pounds of liquid and
8 solid manure, and from that manure about half a
9 pound of methane, and from the belching about
10 another half a pound.

11 This is an interesting resource for
12 reducing greenhouse gas emissions because it's
13 already there, so we can capture these greenhouse
14 gas emissions and combust them and substitute for
15 other greenhouse gas emissions.

16 It's kind of unusual that way. Most of
17 the time you're avoiding the creation of
18 greenhouse gases but you're not actually
19 destroying them in the process.

20 There weren't too many of these in
21 California five years ago, I think there was one
22 operating. We started an initiative about five
23 years ago, some funds were provided in the SP5X
24 program, and there's now about a dozen that are
25 operating, or there very soon will be, out of

1 about 2,000 dairies in California.

2 There's various technologies. You can
3 cover the lagoon -- one thing to remember is these
4 lagoons are really big, they're like two acres or
5 three acres, so you generally want to design
6 another lagoon that's more size appropriate to
7 cover it, or you can use a plug flow complete
8 mix.

9 But you're capturing the greenhouse gas
10 savings when you capture emissions from wet
11 manure. When you have dry manure you don't
12 release very much methane.

13 On the dairy the key element here is to
14 make it low tech. Dairymen are not energy
15 professionals. I've gone to conferences where
16 maybe 150 people are there to hear about digesters
17 and how great they are, and maybe one of them is a
18 dairyman, because they're busy milking cows.

19 So, on the other hand, when I did see a
20 lot of dairymen was at the grand opening of the
21 Castlenelly (sp) Dairy, when the dairymen could
22 see this actually works, and there were about 40
23 dairymen there. So they get interested when they
24 see it actually works.

25 So our goal here is to get enough of

1 them built so they can see hey, my neighbor's got
2 one and it's working.

3 The SP5X program was a buy-down grant
4 providing 50 percent of the capital cost. There
5 was also money from the self-gen program. Despite
6 that we only got about 12 dairymen to actually
7 build. About 30 or 40 applied, but some dropped
8 out for various reasons.

9 The technology's well established, it's
10 used all over the world, particularly in Europe
11 which has several thousand of these, mostly in
12 centralized facilities, more sophisticated than
13 what happens on a dairy.

14 So the big opportunity is you can get
15 rid of greenhouse gases, you reduce VOC emissions
16 because the VOC's that are on top of the lagoon
17 are going to get combusted and destroyed. One
18 real good benefit is you reduce odors, flies.
19 There is one detriment, you produce NOX when you
20 combust the gas, which I'll get to in a second.

21 So this great opportunity is you can
22 control the methane emissions by combusting it,
23 and you produce electricity, which has an economic
24 value. So you can be very cost-effective under
25 the right structures.

1 There had been some barriers, one of
2 which is that farmers are conservative people and
3 aren't eager to try new technologies.
4 Interconnecting with the utilities has turned out
5 to be more complex and costly than the dairy's
6 anticipated, and takes longer, and we're trying to
7 keep working with the utilities to make that
8 process work better.

9 You do have these problems with NOX.
10 The interesting thing about the effect of the
11 greenhouse gases and all the other gases is the
12 San Joaquin Air District has set an inventory
13 level for VOC emissions from cows, and it says
14 that dairies is the number two source of VOC
15 emissions in the valley after transportation, in
16 the central valley.

17 They want to control them. They are
18 proposing that dairies of a certain size will be
19 required to put an anaerobic digester in. But
20 they're not required to make electricity, they
21 could just flare the electricity.

22 But the problem when you combust it is
23 you produce NOX. It's very hard to control
24 because of the hydrogen sulfide. There are
25 technologies to do it, but they're hard to do on

1 the dairy with their level of technology.

2 So it's a problem we haven't solved.

3 There is one other alternative, you can make
4 biomethane out of it, you can take out the
5 impurities and the CO2 and you can produce a
6 natural gas substitute, which they do in Sweden.

7 And also in Seattle, it's the one place
8 in the country, we heard about it this morning,
9 where they put biomethane from landfill gas right
10 in to the natural gas pipeline. So those of
11 course would be cleaner because you can control
12 that for the NOX emissions.

13 The other problem is that the way the
14 law, the net metering legislation works, is not
15 working as favorably for the dairies as we had
16 hoped. They're getting -- solar has a program in
17 AB58 where they get credit for the full retail
18 value of the electricity, in the case of the
19 dairies they're getting credit for the generation
20 portion of that, which is perhaps half of the
21 value.

22 And again the dairies didn't realize the
23 full implications thereof. And that program, our
24 net metering sunsets on January '06, a new bill,
25 AB728, has been submitted, has passed the Assembly

1 and is in the Senate, it doesn't solve the
2 financial problem but at least it keeps the
3 program going.

4 One comment about centralized dairies,
5 I'm sorry, centralized anaerobic digestion in
6 California. They do this in Europe. Of course
7 their economics of energy production are quite
8 different there, they have greenhouse gas taxes,
9 energy costs more.

10 Here, if you're hauling wet manure
11 you're hauling mostly water. That's really
12 expensive, and then you've got to do something
13 with it when you're done with it.

14 If you're hauling dry manure that's
15 better, but of course you don't have the
16 greenhouse gas benefit because dry manure wasn't
17 going to create it in the first place.

18 What you can do is you can pipe the
19 biogas itself to a centralized facility where it
20 would either be upgraded to biomethane or
21 combusted with better NOX controls in a larger
22 facility, but piping might cost \$100,000 a mile,
23 so you don't want to be going too far. But that's
24 another possible solution.

25 We think the program's promising, we'd

1 like to see more of it happening. It's got a lot
2 of benefits. We've got to figure out a way to
3 solve this NOX problem, and we've got to figure
4 out how to encourage the farmers to do this more,
5 especially now that the SB5X program has come to
6 an end. Thank you.

7 MR. OLSON: The next speaker I'd like to
8 call on is Dave Modisette, who's with the Cal ETC,
9 a transportation organization that stimulates
10 alternative transportation and offroad
11 applications of clean energy technologies.

12 So Dave, you're welcome to speak at --.

13 MR. MODISETTE: Thank you, Tim, and
14 Commissioners. I'm Dave Modisette, I'm Director
15 of the California Electric Transportation
16 Coalition, although I'm going to try to make my
17 comments less specific to electric transportation
18 and more generic to the transportation sector in
19 general.

20 I'd like to focus my comments today on
21 the transportation sector issues and approaches
22 that were outlined by the Center for Clean Air
23 Policy this morning, and at the Climate Change
24 Advisory Committee yesterday.

25 But first I do want to note that last

1 Friday, at the IEPR Committee hearing on
2 alternative fuels, Mike Jackson of TIAX did make a
3 presentation on electric transportation and goods
4 movement technologies, including an estimate of
5 the expected and achievable greenhouse gas
6 reduction benefits, and I did bring some hard
7 copies of that with me today. I'm not going to
8 repeat that though.

9 The bottom line of the presentation was
10 that these technologies can provide an additional
11 reduction in greenhouse gas emission of about 20
12 million tons in 2020.

13 Some of these technologies have been
14 included in the CCAP evaluations, such as truck
15 stop and port electrification, but others were not
16 included, and therefore represent additional
17 reductions available to California policy makers.

18 Obviously transportation has to be part
19 of the solution to climate change. It is the
20 single largest sector of greenhouse gas emissions.
21 One of the recommendations of CCAP and the Climate
22 Change Advisory Committee is to coordinate
23 greenhouse gas reduction strategies with other
24 benefits, including reduction in criteria air
25 pollutants and petroleum dependents and

1 transportation planning benefits.

2 This is critically important for two
3 reasons. First of all, if we don't do this, if we
4 are just carbon-centric -- that was one of the
5 terms that was used frequently yesterday -- then
6 we're actually under counting the benefits and
7 skewing the evaluation towards solutions which are
8 not optimal.

9 Some of the comments you heard from CCAP
10 this morning about the possible cost of
11 transportation measures may suffer from just this
12 problem. California is already pursuing some of
13 these technologies and strategies for air quality
14 purposes so we're essentially getting greenhouse
15 gas reductions for free.

16 And if we explicitly included greenhouse
17 gas reductions with some of these other benefits
18 then we could ensure maximum benefits in both
19 these sectors.

20 Secondly, and I guess more practically
21 speaking, California, local governments, and
22 federal governments have made very, very large
23 investments in institutions and appropriated
24 resources devoted to air quality, to
25 transportation, to energy, and to utilities.

1 It just seems like it would make more
2 sense to build upon these and integrate in to each
3 consideration of all three policy goals; that is,
4 reduction in greenhouse gas emissions, reduction
5 in criteria air pollutants, and increased fuel
6 diversity.

7 I also agree with CCAP that there is no
8 silver bullet. We need a mix of strategies that
9 includes all sectors in transportation, including
10 light duty vehicles, trucks and freight movements,
11 marine ports, airports, and non-road industrial
12 vehicles and equipment.

13 We need a combination of strategies,
14 including removing barriers for these
15 technologies, financial and regulatory incentives,
16 regulatory requirements, research development and
17 demonstration, working with public and private
18 fleets, information and outreach programs. We
19 need a balance of short and long-term strategies,
20 bottom up and top down approaches.

21 So how do we do this? I think we do it
22 through the development of a state implementation
23 plan for transportation fuels and technologies,
24 which addresses our three policy goals and which
25 goes sector by sector, application by application,

1 technology by technology.

2 Admittedly, this would be an ambitious
3 effort, but a necessary one if we are to achieve
4 our goals in the difficult transportation sector.

5 Cal ETC would be please to participate
6 in the development of such a plan, and I think
7 other stakeholders would as well.

8 Thank you, and I'd be happy to answer
9 any questions you have.

10 MR. OLSON: Okay, our next speaker is
11 John Nickerson, who is Inventory Manager of the
12 Mendocino Redwood Company, LLC. He has been
13 involved in the development of the first industry-
14 specific protocol for the California Climate
15 Action Registry, the forestry protocol, and this
16 company is interested in forestry sequestration
17 projects. So welcome John Nickerson.

18 MR. NICKERSON: Thank you, Tim, and
19 thank you all for the opportunity to speak here on
20 forestry issues.

21 As Time mentioned, I am the GIS -- he
22 mentioned inventory, I also manage the
23 Geographical Information System for Mendocino
24 Redwood Company, and I'm part of an asset
25 management team.

1 And it's that relationship with
2 Mendocino Redwood Company that lets me go out and
3 explore these other opportunities.

4 Mendocino Redwood Company is 230,000
5 acres, mostly in Mendocino County, some in Sonoma
6 County as well. Most of our land holdings are
7 with redwood and Douglas fir.

8 Foresters have long known that how we
9 manage the forest is more than timber alone. We
10 manage forests for recreation, we manage forests
11 for habitat, we manage forests for clean water,
12 and we also manage forests for carbon
13 sequestration.

14 Many of these other things, outside of
15 timber, are not rewarded in the marketplace. And
16 I think this is where the opportunity now exists
17 in California, it's starting to surface.

18 We know that forests are part of the
19 problem in the climate world, and they are also
20 part of the solution. When trees absorb CO2 from
21 the atmosphere they're sequestering carbon,
22 putting it away for long periods of time.

23 CO2 is released when trees are
24 harvested, burned, or converted to other uses.
25 Globally, foresters are net emitters of CO2. It's

1 estimated that 20 percent of the global CO2
2 emissions are from forest loss, and it represents
3 a staggering 1.4 billion cars annually.

4 In California the problems are somewhat
5 different. It's not so much from forest
6 management as it is from conversion to other uses,
7 from conversion to agriculture and from conversion
8 to housing.

9 Forest management in California
10 generally is resulting in a net stock gain of
11 carbon, as we're growing more than we're
12 harvesting.

13 Why are conversions occurring? They are
14 occurring because land values in California are
15 increasing at a rate that we can't afford to go
16 out and buy land and manage them for timber alone
17 anymore.

18 Real estate values have become so high
19 that sometimes the development values are three,
20 four, five times the timber value on the property.
21 So these other values that I mentioned earlier
22 simply are not being rewarded.

23 And I think this is where the
24 opportunity exists, with carbon being the first
25 ecological asset to come to the surface.

1 So what can we do, as forest managers,
2 to make a difference in the carbon world? How
3 does forest management make a difference?

4 It's the way we harvest trees. If we
5 increase the retention during harvest we're still
6 recognizing a timber benefit but we're keeping
7 more carbon on the ground, that opposed to say a
8 clear cutting. But even with clear cutting we can
9 go to an extended rotation on the ages of our
10 timber stands.

11 Other opportunities in forest management
12 include restoring conifers to increase the long-
13 term storage. Many of our lands in past
14 management, there's been burning for management,
15 trying to convert them to other uses in the past,
16 so a lot of them are choked with hardwoods, and
17 they're not at their optimal level for carbon
18 storage at this point.

19 So one thing that could occur is
20 nothing, and that's not a very dramatic shift in
21 carbon that's stored on the land. Or we could go
22 to some of these lands and restore them to their
23 full conifer stocking and conifers will store more
24 carbon than the hardwoods will.

25 There's also reforestation activities in

1 lands that are out of forest production. These
2 lands can be planted back in to trees and over
3 time will store a lot more carbon than if left
4 alone.

5 So what do we need in the forestry world
6 to make this happen? We'd like to see a cap and
7 trade system so that our end of it would be
8 monetized, we would be able to expand the
9 complexity of our management, where carbon would be
10 another asset to be managed.

11 We'd like to see tax incentives,
12 regulatory relief, and direct payments for land
13 owners who are willing to permanently sequester
14 their land for long periods of time through
15 vehicles such as a conservation easement.

16 We would like other policies that would
17 help develop market based solutions to reduce the
18 risk of wildfires.

19 So in summary, the forest sector can be
20 managed to increase overall carbon stocks, and it
21 can also be managed to protect the loss of CO2
22 emissions from forest fire. Thank you very much.

23 MR. OLSON: Okay. At this point we're
24 going to go a little bit out of order. Our next
25 speaker is Russell Jones, Research Manager of the

1 American Petroleum Institute.

2 And he has a little break after his
3 presentation, and then we're coming back.

4 MR. JONES: Thank you. Russell Jones
5 from the American Petroleum Institute, or as we
6 sometimes say from the east coast, I'm from
7 Washington and I'm here to help.

8 But more seriously, we're a large trade
9 association. We work with a lot of the major
10 companies, both domestic and internationally. And
11 we do work with, we have a lot of state petroleum
12 councils, but ours are primarily on the eastern
13 part of the United States.

14 We do work with other trade
15 associations, and at the request of WSPA we're
16 providing some technical assistance to describe
17 our Climate Challenge Program, and we appreciate
18 the ability to respond to the Commissioners and
19 come out here and give a quick presentation of
20 what our program consists of.

21 I'm going to go quickly through the
22 program and then highlight some of the things
23 we've actually learned in the process, with some
24 examples of actions our companies are taking.

25 Our program was established about two

1 and a half years ago with three key components --
2 a climate action challenge, a climate R&D
3 challenge, and a greenhouse gas estimation and
4 reporting challenge.

5 I'll go through each of these quickly.
6 The goal of the climate action challenge is to
7 reduce our industry's GHG intensity in the near
8 term, emphasis on GHG intensity and emphasis on
9 near term, what are the actions we're going to
10 take now.

11 We focused on intensity because that's
12 what the current Administration's program is
13 structured. We set up a number of numeric goals.
14 One of the numeric goals is to improve the
15 aggregate energy efficiency of our member's
16 refinery operations by ten percent over a decade.

17 Some of the other goals include that our
18 members, 100 percent hopefully, participate in the
19 program and develop greenhouse gas emissions
20 management plans, improve the participation of our
21 member companies in EPA and programs like the
22 EPA's Natural Gas Star Program and the CHP
23 Challenge Program.

24 There's a wide variety of ways our
25 members can participate. We have a great

1 diversity of memberships, we have large companies,
2 we have small companies, none of the asset mixes
3 are identical, so we have to allow companies a
4 wide variety of options.

5 And on the first two, they're focusing
6 on methane. And methane is a powerful greenhouse
7 gas with a GWP of 21 or 23, depending on which
8 study you look at, times CO2. Our members have
9 spent a lot of effort in expanding cogeneration,
10 sometimes called CHP, Combined Heat and Power.

11 CHP is extremely efficient. You can get
12 efficiencies up in the 80 percent range, sometimes
13 higher, compared to separate generation of steam
14 and electricity. If you have a facility that
15 needs both or if you have a facility that needs
16 processed steam and you can sell your electricity
17 you have a good opportunity for combined heat and
18 power.

19 Our programs included the options of
20 looking in to carbon capture and storage, the more
21 traditional approach of improving energy
22 efficiency. Our members produce a whole lot of
23 low carbon, low CO2 natural gas, the lowest carbon
24 fuel of fossil fuels.

25 We're not restricting ourselves to

1 petroleum products. Our members produce a lot of
2 different things, so we have alternative energies,
3 alternative technologies, and we endorse the
4 participation in voluntary conferences and
5 programs.

6 The R&D Challenge, the goal of that is
7 to create new options for reducing GHG intensity
8 in the longer term. And the thrust of this is
9 that companies, when they're making R&D decisions,
10 that they integrate greenhouse gas emissions
11 concerns into that decision making process.

12 Again, companies are always looking for
13 energy efficiency options, looking at alternative
14 energy fuels, vehicles, and technologies, things
15 like that, carbon capture and storage as well.

16 Greenhouse gas estimation and reporting
17 challenge, we have emphasized, at the insistence
18 of our members, the creation of consistent and
19 sound bases for estimating greenhouse gas
20 emissions.

21 Why this concern over consistency and
22 soundness? I won't go into the long history here,
23 but we created what we call the compendium of
24 greenhouse gas emissions methodologies that
25 applies particularly to the oil and gas industry.

1 And if you're just talking fuel
2 combustion there's a lot of similarities between
3 us and anybody else who uses a fossil fuel, but we
4 have a lot of facilities that nobody else in the
5 world has or cares about. So we want to make sure
6 those are covered appropriately.

7 And after we created our compendium we
8 went back and did a comparison with other
9 compendiums, and just to give you an idea why we
10 are concerned about methodologies, this compares
11 the API compendium on the left for an onshore oil
12 production facility, these are the methane
13 emissions.

14 And looking at the bars across the
15 bottom, our pal is the RPEL is the Latin American
16 protocol, BIP is not really BIP it's EIIP EPA
17 methodology. ENP Forum is a European
18 organization, oil and gas. CAP is a Canadian
19 organization, oil and gas industry. And the IPCC
20 is the Intergovernmental Panel on Climate Change.

21 And even if you ignore the non-
22 combustion emissions and just look at the
23 combustion emissions, there's a wide range of
24 estimates of emissions using these various widely
25 accepted protocols.

1 But when you add in the non-combustion
2 emissions, the range between the high and the low
3 is a factor of five. So that's one reason our
4 members have been very insistent on working to
5 promote consistent estimation methods.

6 Another example we looked at was the
7 large complex refinery, and this is CO2 emissions
8 this time. And there's less variation when you
9 look only at combustion, but in fact there is
10 still a good bit of variation, probably a factor
11 of five percent or so.

12 But then the question is do you have all
13 of the emissions? And the API compendium is
14 including non-combustion emissions, and you can
15 see how much higher our estimate is than the other
16 protocols.

17 And a lot of this basically goes to what
18 is included: And I want to make sure that
19 everyone that is estimating emissions is doing it
20 the same way basically.

21 So when we get to actually doing this,
22 as I mentioned we do have the compendium, which is
23 a technical document. If you know what your
24 emission sources are the compendium will help you
25 work through and estimate those emissions.

1 But we also worked internationally with
2 IPIECA, which is the International Petroleum
3 Industry Environmental Conservation Association,
4 as well as OGP, which is the European Oil and Gas
5 Association, to create what we call the
6 guidelines.

7 The guidelines is more of a policy
8 document, it's more of a what do you want to count
9 when you want to count emissions, whereas the
10 compendium is how do you count the emissions that
11 you know you want to count.

12 Under this program our members that are
13 participating are committed to report their
14 greenhouse gas emissions and activity factors,
15 which is how we're going to calculate intensity,
16 greenhouse gas emissions divided by activity
17 factors will give us intensity.

18 And we're going to be reporting this and
19 developing internal blind reports for the various
20 companies so they can compare their various
21 activities with the norm.

22 Now we get to the really hard part, The
23 Climate Challenge Program. The first is actually
24 doing this, what I've described is the goal that
25 we established back two and a half years ago.

1 Then another hard part is tracking it, what are
2 our members doing. And communicating it, so that
3 we know what we're doing, or we need to know how
4 we need to do things more or better or different.

5 I'll give you a couple of examples of
6 things we have completed under this program.
7 We've completed the guidelines, the IPP guidelines
8 for reporting emissions. We've completed the
9 compendium. We know that the compendium will be
10 an evergreen document because the information
11 changes as you understand emission sources better.

12 And there are a number of software tools
13 out there that can be used to calculate greenhouse
14 gas emissions. Chevron developed several years
15 ago, at considerable expense, a software called
16 Sangea.

17 They have donated it to API, and API is
18 making it available for free to anyone in the oil
19 and gas industry or anyone who is regulating the
20 oil and gas industry, that's the terms of our
21 contract.

22 And if you go to GHG.API.org -- there's
23 no WWW there -- and I use the Internet a lot and I
24 don't know why there's no WWW, but it works, so --
25 .

1 But if you go there you can download the
2 guidelines, you can download the compendium, and
3 you can put in an application for a copy of the
4 Sangea.

5 Now we've also taken -- as I mentioned,
6 the compendium is designed to estimate emissions,
7 but it also can be used to estimate emission
8 reductions. You have to define your base case,
9 and you have to design what the future's going to
10 be with the project that you're talking about.

11 Well, we've tested it with a wide
12 variety of emission reduction options, and we've
13 published these. We've been working actively with
14 the Department of Energy's 1605B emissions
15 reporting and emissions reduction reporting
16 program, commented extensively on the general and
17 technical guidelines, and are pleased to say that
18 the guidelines recognize the API compendium in the
19 guidelines, and the API was the only association
20 to be so recognized.

21 We've also engaged in outreach to
22 various registries. The California Registry is
23 looking at our compendium. We've also worked with
24 WRI, the IPCC, Canada, which is a Kyoto Protocol
25 company, is looking in to this as well. And we've

1 had a fairly extensive outreach to technical
2 experts, trying to make sure this is a good,
3 viable document.

4 In terms of action examples, this is an
5 old number from last year, last year about this
6 time, 90 percent of our upstream, that's the E&P,
7 Exploration and Production members volumes, have
8 said they'd participate in our program, and 95
9 percent of the downstream, which is refining and
10 marketing, have said they are going to
11 participate.

12 Late last year we reached our goal of
13 100 percent participation in the Natural Gas Star
14 Program. We're working very closely with EPA's
15 Gas Star, Methane to Markets, and the World Bank
16 Global Gas Flaring and Reduction Program, all
17 aimed towards reducing methane emissions.

18 A couple of specific examples of actions
19 companies are taking, there's a new project in
20 Wyoming that is actually today sequestering CO2
21 and using it to enhance the oil production from
22 the field. A lot of companies who have been
23 looking at energy efficiency, sort of on a
24 facility by facility basis, have launched company-
25 wide programs.

1 There's a new CO2 capture program in
2 Algeria. Both in the US and abroad our members
3 are increasing in their production of solar, wind
4 and LNG production, again taking stranded natural
5 gas in some instances and bringing it into the
6 United States or other countries for use as a low
7 carbon fuel.

8 Our companies are working to reduce gas
9 flaring and venting in both the US and abroad.
10 There's a natural gas pipeline going in in Africa
11 that will allow the natural gas that is there to
12 be used to create electricity for the people in
13 Africa.

14 Some companies are looking at tree
15 planting. We've got a couple of companies
16 involved in geothermal production and electricity.
17 As I mentioned, increased cogen and CHP, there's
18 been a lot of that.

19 And technologies, a lot of our members
20 are teaming up with different automakers in terms
21 of -- well, the government program for freedom
22 carb, but different ways to get hydrogen to
23 vehicles, including participation in the
24 California Fuel Cell Partnership.

25 Other companies are focusing on how on

1 Earth you produce hydrogen for use in these
2 vehicles.

3 We've identified seven different
4 academic type research initiatives. With the
5 exception of the second one, the MIT joint program
6 on science and policy, everything here is either
7 basic research or really basic research. Some of
8 these, the Princeton, the GCEP program, they're
9 asking very fundamental questions on how energy is
10 used in societies and how it could be produced
11 with a lower environmental impact.

12 In terms of background information on
13 why our companies behave the way they do in
14 certain instances, if you look at the Energy
15 Information Administration's financial reporting
16 system, which covers the top 25 or 30 major oil
17 and gas companies in the United States, and you
18 look at their operating expenses -- and here I'm
19 excluding the raw materials expenses, which is the
20 crude oil which is used in refineries -- energy
21 expense accounts for, in the last four years, 44
22 percent of total operating cost for refineries.

23 This is a huge expense item for
24 refineries. To think that refineries on an
25 ongoing basis do not seriously worry about

1 reducing those costs is just not operating in the
2 same reality that the businesses do.

3 These 25 companies are spending \$10
4 billion a year on energy. They would just love to
5 reduce that number.

6 And one other thing. For totally
7 unrelated purposes, several years ago I compiled
8 the list of combined heat and power facilities at
9 oil and gas operations in California. There's a
10 disadvantage of this in that the data's a little
11 bit old. A couple of advantages, it's straight
12 out of an energy information form, and also the
13 fact that it points to 1999 and indicates that our
14 companies have been serious about energy
15 efficiency for a good long number of years.

16 A lot of this, in certain instances,
17 particularly in the downstream, which is refining,
18 a lot of this electricity is used onsite. But
19 particularly when you get to the upstream, where a
20 lot of the electricity is sold to the California
21 grid and most of this electricity is generated
22 using natural gas, the actual numbers are higher
23 than this because I've included as non-natural gas
24 those few instances where the data was not
25 reported.

1 So the numbers, at least 83 percent for
2 upstream and 71 percent of this cogen is powered
3 by natural gas.

4 Challenges and lessons from our program
5 over the last two and a half years. Quantifying
6 these voluntary actions isn't easy. When
7 companies develop their projects they're not
8 described consistently with other companies'
9 projects, they're different projects, they're in
10 different countries, they're in different states.

11 But particularly when you get to R&D
12 efforts, how do you quantify \$100 million R&D
13 effort? It's pretty hard to do that.

14 In terms of lessons learned, API is
15 focusing on US options. We're in the process of
16 trying to develop a report identifying the things
17 that our companies are doing, but in fact the
18 companies are taking a global perspective on this,
19 and they're seeking out the lowest cost options
20 for reducing emissions.

21 And if that's in Africa then they do it
22 in Africa. Our companies have also given us some
23 push back in making it clear that emissions
24 reporting can be costly and I think, and they've
25 clearly indicated that it raises confidentiality

1 issues with them.

2 I think that probably derives, just a
3 personal opinion, from the fact that a refinery,
4 44 percent of its operating costs are energy. To
5 the extent that your competitors know what that is
6 they know what the competitive situation is.

7 And if you're improving that and they're
8 not then they know they need to do more. So
9 there's some competitiveness information involved
10 here.

11 But also the GHG inventories don't
12 provide the emission reduction cost information.
13 I mean, Ned Helme made that point earlier today.
14 You can know what a refinery's emissions are, but
15 that doesn't tell you what it's going to cost to
16 reduce them, the cost at the refinery.

17 So that's a quick run-through of the API
18 program over the last several years.

19 MR. OLSON: Okay, our next speaker,
20 actually two speakers, representing the California
21 Portland Cement Company.

22 And I'd like to introduce John Bennett
23 first, he is as you may remember from yesterday,
24 he's a member of our Climate Action Advisory
25 Committee, and he's going to turn it over to I

1 think Steve Coppinger for a presentation.

2 MR. BENNETT: Well, great, thanks Tim.
3 Commissioners and staff, we sure appreciate the
4 opportunity to come and speak to you today. I
5 represent a company that was one of the founding
6 members of the Cement Sustainability Initiative,
7 which is partners with the World Business Council
8 for Sustainable Development and the World
9 Resources Institute.

10 Back in year 2002 these cement companies
11 got together and formed a set of principles and
12 agenda for them to move forward with, and they
13 certainly embrace the idea of greenhouse gas
14 emission reporting and quantification and focus on
15 our goals of reducing our greenhouse gas
16 intensity.

17 And I have the opportunity today to
18 share with you a program that will be presented by
19 Steve Coppinger, our chief electrical engineer.
20 He also manages the company's energy, corporate-
21 wide energy management programs.

22 And Steve and his team's efforts this
23 year have been notable and have been recognized by
24 EPA. The company was named one of two energy
25 partners of the year through the Energy Star

1 Program and that's in no small part to efforts
2 both at our staff level and our plant level, and I
3 think Steve's presentation will be very
4 interesting in terms of the types of things that
5 we're doing within the company to achieve our
6 overall reductions in greenhouse gas intensity
7 with respect to energy conservation.

8 So Steve, let's hear all the good stuff.

9 MR. COPPINGER: Okay, thank you, John,
10 thank you, Commissioners, for this opportunity.

11 Today I'm going to quickly go through an
12 energy management program that we started at
13 California Portland Cement Company about two years
14 ago, in 2003. And I'll give you a little
15 background on our company and how we're organized
16 as an energy management program, and I'll touch on
17 some of the initiatives and projects that we've
18 worked on since we started this program.

19 And then I'll briefly talk about some of
20 the resources that are out there for all of the
21 industries, not just the cement industry, that
22 provide incentives and other information that can
23 be used to reduce overall energy, and then I'll
24 sum things up with some results that we had.

25 California Portland Cement Company was

1 founded in 1891 at our cement plant in the Coulton
2 area of southern California, about 60 miles east
3 of LA. We manufacturer cement, concrete, and
4 aggregates, and most of our facilities are in
5 California, Arizona, Nevada area, and our market
6 area is typically the southwest US.

7 The cement process is a very intensive
8 energy process. We have a lot of grinding,
9 crushing, heating processes that require a lot of
10 energy, so back in 2003 we decided to work with
11 Energy Star to create a program, a formal program
12 of energy management, so we could focus in on ways
13 that we could reduce energy and at the same time
14 improve the environment through reductions in our
15 emissions, both direct and indirect.

16 The way we're organized, we have a
17 corporate energy management team that's made up of
18 employees, mainly engineers, some financial
19 people, some operations and maintenance people,
20 that meet every six weeks at our various plants
21 throughout the company.

22 And the reason we go to different plants
23 is to bring in the local employees so that they
24 can contribute to the program and make
25 recommendations, since they're out there working

1 on the front lines.

2 We also have local energy teams set up
3 at each of our facilities so that they can meet
4 with plant departments and take some of the things
5 that we've developed through the corporate team on
6 to the local plant level.

7 And then finally we developed a process
8 energy team that focuses in on process areas, such
9 as milling systems or a kiln or a pre--heater
10 tower, for example, in our industry. And that
11 team is made up of process engineers from our
12 different cement plants.

13 And about every six weeks they go around
14 and focus in, they take measurements, look at
15 operational data, and try to come up with ways
16 that we can focus in on reducing energy in those
17 process areas.

18 And quickly I want to mention two key
19 things in our program. One is corporate support,
20 that we have support all the way up to the top, up
21 to the CEO, as far as backing up our program. And
22 that's critical so that we can get some of these
23 ideas implemented.

24 Our Senior VP of Operations and our VP
25 of Engineering attend our meetings every six

1 weeks, and I can't tell you how important that is
2 to keep our program moving.

3 Also the other critical item is plant
4 support, getting the plant managers to buy in, and
5 getting participation of the local plant people to
6 attend our meetings and to contribute to this
7 whole process.

8 I'll briefly get in to some of the
9 initiatives and give you some examples of things
10 that we have done. I'll try not to bog you down
11 with too many details, but I'll at least give you
12 an idea of the things that we look at to save
13 energy and to reduce emissions.

14 Compressed air is one of the most
15 expensive common plant utilities we have at our
16 cement plants. It's about seven times less
17 efficient than mechanical energy to produce
18 compressed air.

19 For example, if you took a one
20 horsepower air tool, it takes seven horsepowers or
21 electrical energy to run that, to operate that
22 tool. So it is a very expensive operation.

23 Our first initiative that we did at CPC
24 was to conduct an energy audit at one of our
25 plants. And through that audit, just that one

1 audit alone, we came up with \$400,000 worth of
2 opportunities in energy management and energy
3 savings.

4 And we did that by focusing on four
5 different areas -- compressor operations, how the
6 compressors are running, how they're being
7 maintained, the pressure that we keep up. And
8 looking at how we condition the air, because part
9 of the compressed air process is that you
10 inherently have condensation and liquid in the air
11 line.

12 You have to get rid of that air, and
13 then by doing that you lose -- I'm sorry, you have
14 to get rid of the liquids, and by doing that a lot
15 of times you lose the air. So this is a good
16 opportunity.

17 And some of the things that I'm
18 mentioning today are not just for cement, of
19 course, they're for many industrial-type
20 applications.

21 Another thing we look at is compressed
22 air use, to make sure that the air that we're
23 using is the appropriate use for that.

24 And the last thing is looking at
25 compressed air leaks. And this table, and this is

1 the only table, I promise you, is the only table
2 that I'm going to show you today, but -- the
3 bottom line here, if you look at this whole
4 diameter, this is, through this audit we tried to
5 quantify the amount of air, the cost of losing air
6 through leaks.

7 And that bottom line says that a half
8 inch air leak can cost our plant \$32,000 a year.
9 So that opened a lot of our eyes, and that made us
10 realize there are a lot of opportunities just in
11 compressed air alone that we could save energy on.

12 This is, it might be hard to see this,
13 it looks like the top of a champagne glass, but
14 this is an underground leak that we had at our
15 plant that we found through this investigation
16 that we did.

17 And as a result, and you can imagine
18 what the cost of that leak that I mentioned, how
19 important it is to get something like this
20 resolved.

21 So we installed about 600 feet of above
22 ground air piping in order to eliminate that
23 underground leak. That's one of the things that
24 we did as the result of that audit.

25 We also worked with, we have thousands

1 of dust collectors throughout our plants. And
2 those collectors pretty much separate the dust
3 from the air so we'd have clean air emissions.
4 And we've looked at some clean air technologies in
5 dust cleaning timers so that you don't --.

6 The way these bags, these dust collector
7 bags is cleaned is by pulsing them with compressed
8 air to clean the dust off, shake the dust. What
9 we've found in the past is that some of the older
10 technology, these controllers, they just time on a
11 continuous basis, they're not intelligent enough
12 to only time or pulse when they need to.

13 So we put in all these new controllers.
14 And we've done that throughout the whole company
15 and that's saved us a huge amount of energy
16 overall.

17 This is a picture over here of a air
18 receiver, which is basically just a big surge tank
19 for air, just an air storage tank. And as I
20 mentioned before, you inherently develop liquids
21 inside these tanks, so you have to get rid of the
22 liquid so that when you use the air it's not
23 filled with water.

24 But in any case you have to get rid of
25 that, and we've installed many automatic drain

1 systems. What they used to do is they had timers
2 that just released the liquid and the air at the
3 same time.

4 The newer automatic drains, what they do
5 is they'll isolate the liquid, they'll just
6 eliminate liquid without losing any air. So we do
7 save a lot in that regard.

8 Air lance is kind of a necessary evil at
9 our plants. And air lance is just using high
10 pressure air to clean up maybe a plugged shoot or
11 something like that.

12 And until we knew how much air cost to
13 produce we had a tendency to just plug an air
14 lance in and just keep it running, just running
15 for hours and hours.

16 But as I mentioned before with that cost
17 of air, we now know how expensive that is.
18 Through our awareness program we're trying to get
19 people to reduce the use of some of these devices.

20 This is just a one inch airline that's
21 going in to cool a motor. They call it an air
22 horn, but it's nothing more than using compressed
23 air to cool. We're currently replacing this unit
24 with an electric blower so you save energy in
25 that.

1 And then this is a compressor after
2 cooler, another air program that we've initiated
3 to condition the compressed air so that we lower
4 the exit temperature of the compressor so that we
5 eliminate the liquid that's developed in there.

6 I mentioned before that we have a
7 process improvement team. As I said, they focus
8 in on certain plant areas and try to reduce
9 energy. They establish baseline information so
10 that they know what improvements are being made,
11 and they look at other things like heat losses and
12 chemistry and try to stabilize the process.

13 So these are all contributing to the
14 overall efficiency of our plants. And then I'll
15 have reports that outline what the recommendations
16 are, what the opportunities are to save energy.

17 Another area that we're looking into is
18 electrical and lighting improvements. We have a
19 motor management program throughout the company
20 where we inventory the amount of, the different
21 motors, and we have I think thousands of motors
22 company-wide, to try to determine what their
23 efficiency is.

24 What do we have out there. And our
25 plants are fairly old, so we have motors that have

1 been running for 20 years in some cases.

2 So what we're doing, we have a new
3 purchasing policy now where we require that the
4 plants only purchase premium efficiency motors
5 that meet the latest NEMA standards. So that's
6 something that we're also doing for motor
7 management.

8 Also looking at properly sizing motors.
9 And engineers you have a tendency sometimes to put
10 in big motors so you don't have a problem with
11 starting or things like that, but what we've found
12 is that there's an optimum efficiency level for
13 motors.

14 For example, 75 percent of a motor load
15 is where you get your best efficiency. If you
16 start getting down to 40 percent you're going to
17 dramatically lose efficiency. So again that's
18 another initiative we've tried to educate people
19 on.

20 I won't get in to power factor, but
21 suffice it to say that that is one way to reduce
22 losses in things like transformers and rotating
23 machinery.

24 We also try to use variable speed drives
25 where appropriate. I'll give you an example. If

1 you're trying to control air flow and you have a
2 fan or blower and you turn that blower on full
3 speed and then you try to control the air flow
4 through adjusting a damper that's the equivalent
5 of running a car at 100 percent of speed and using
6 a brake to control it. So you can see where
7 that's really not efficient.

8 So what we've done is put variable speed
9 drives to provide just enough air and regulate it
10 through the speed of the motor.

11 And then lighting efficiency has been a
12 big initiative lately. There's been some big
13 incentives from a lot of the power companies in
14 California. We've conducted lighting surveys at
15 almost every one of our manufacturing plants.

16 One of our plants in particular was very
17 active in replacing lighting and they are going to
18 be getting a rebate in addition to the advantages
19 of having premium efficiency lighting. They're
20 getting up to \$50,000 in a rebate for replacing
21 office lighting and warehouse and laboratory
22 lighting. So it's a pretty significant amount of
23 money.

24 This is a picture of a new motor. You
25 can tell it's new looking at the rest of the plant

1 there, but CPC participated in a motor research
2 program that was sponsored and funded by the
3 Department of Energy where they gave out, we had
4 to qualify, but they have out eight efficiency
5 motors to two of our plants, at a value of about
6 \$40,000.

7 And they were fairly large motors, up to
8 150 horsepower. But the only requirements on our
9 part were to send the old motors back so they
10 could do some research on them and some testing.
11 And their program is to promote premium
12 efficiency, so we had eight brand new motors of a
13 pretty significant size and cost in addition to
14 getting the advantage of getting premium
15 efficiency for these motors.

16 So that's just one of the programs I
17 wanted to throw out for anybody who's working in
18 industry, there are a lot of different programs
19 where people are trying to promote energy
20 efficiency and they're willing to pay you to do
21 that.

22 We're also looking at mechanical drives,
23 and one of our big programs here is replacing V
24 belts with cog belts. The V belt, similar to what
25 you have in your car, the V belt connects the

1 motor to the drive unit or to the piece of
2 equipment that you're operating. And a V belt is
3 just a standard belt that you'd have in your car.

4 A cog belt has ridges on the belt so
5 that it grabs a little bit better and it provides
6 about three to five percent improved efficiency.
7 So we have a program where we're doing this
8 proactively at all our plants, trying to replace
9 all these belts.

10 We also try to maximize efficiency of
11 drives through specifications, and although we
12 haven't done much work with it we're also
13 interested in optimizing our HVAC and insulation
14 systems, since most of our plants operate in a
15 very hot desert environment.

16 This is just a picture of that cog belt.
17 There's a guard over it but that's the type of
18 belt that we're talking about replacing.

19 Another big initiative is engineering
20 operations and maintenance. One of the first
21 things we did in conjunction with Energy Star is
22 to develop a set of guidelines for our employees
23 that outlined different recommendations for saving
24 energy.

25 We had that distributed throughout the

1 plant and we also had it posted on our intranet so
2 that people have access to that at all times.

3 And another important factor is energy
4 saving specs, specifications, so if you're
5 expanding your plant of building on to it or
6 buying new equipment, if you develop
7 specifications that you can give to your
8 purchasing people you have a better chance of
9 getting that new equipment at a premium efficiency
10 rating.

11 We try to reduce operating times of
12 equipment. For example, there are belt conveyors
13 at times that people leave running because it's
14 convenient, but there may not be material on them,
15 so we put in automation systems at our plant to
16 minimize that.

17 And of course reliability of equipment
18 is critical. And our plant -- the cement process
19 is continuous, 24 hour a day operation for about
20 330 days a year, so any time you have an outage
21 due to an equipment failure it's going to take a
22 lot of energy to bring the plant back up to where
23 it was running before, so it's critical you have
24 good maintenance and you can avoid some of these
25 failures.

1 We also track some of our energy
2 projects through our work order system, and then I
3 mentioned before about purchasing and inventory
4 policies, making sure that we buy only premium
5 efficiency equipment and making sure that we have
6 that available in stock.

7 And I think one of the biggest things,
8 and this is the last initiative I'll talk about,
9 but one of our biggest initiatives is awareness
10 and training and providing employees the knowledge
11 on what they can do to save energy and look at
12 some of the opportunities and have them contribute
13 to the whole process.

14 We try to communicate our policies. It
15 doesn't do you any good to have policies on
16 purchasing if the purchasing agent doesn't really
17 know what you're trying to buy or is not clear on
18 what he or she should be buying. So we make sure
19 that communication is a big part.

20 And when we do have our meetings I
21 distribute the meeting minutes to many employees
22 throughout the company, including the CEO, so he
23 gets a copy of them and he knows exactly what's
24 going on in our program.

25 We also have signs that we put out in

1 the plant to remind people of things they can do
2 to save energy.

3 We try to communicate tips and successes
4 and give recognition to employees that have done
5 good things with energy savings. Our newsletters
6 continuously have articles in there about our
7 energy program, some of the awards that we've won.

8 Quickly I'll go in to some of the
9 resources that are out there. EPA, as I mentioned
10 before, got us started in this whole program.

11 They have a cement industry group that we work
12 closely with where cement companies get together
13 periodically either through web conferences or in
14 person to discuss ways or share ideas on how they
15 can save energy more effectively.

16 And Energy Star also provides us with a
17 consultant or an account manager that's free to
18 us. And he's been a great resource and we don't
19 have to pay a nickel for it, and he's the one who
20 helped us pick out the whole program. So that's
21 something out there for people to take advantage
22 of.

23 We talked about rebates, we currently
24 are doing some upgrades at our plants, we're
25 getting, one project we're getting \$260,000 in

1 rebates for putting a new, high efficiency
2 separator in one of our mills. And that really
3 helps with the justification of putting high
4 efficiency equipment in.

5 I mentioned that motor research project
6 already. And the Department of Energy also offers
7 a lot of training and software, and in addition we
8 were successful in being awarded a plant-wide
9 assessment grant and the Department of Energy is
10 paying for 50 percent of the cost of doing a
11 complete plant-wide energy assessment at one of
12 our plants, and that's a value of \$59,000, not to
13 mention all the opportunities that by doing this
14 assessment, all the energy saving opportunities
15 that we should get from that.

16 The Department of Energy also has
17 software programs like motor master, that allow
18 you to calculate how much savings you'd have in
19 your motor plant by using efficiency motors. And
20 in Arizona we also work with the Department of
21 Commerce in getting some training from them.

22 Our results. In the short time we've
23 had our program we've save about three percent in
24 energy in 2004 versus 2003, reduced CO2 emissions
25 by 27 million pounds in 2004. We have many

1 initiatives that are very well established now
2 that are self-energizing, they continue to move
3 on.

4 We also have increased the awareness
5 throughout the whole company, from the top to the
6 bottom, the folks that are out there in the
7 trenches as well.

8 We rewarded several awards this past
9 year due to our program in energy management.
10 Coulton Plant was awarded Portland Cement
11 Association's environmental award for energy and
12 our Arizona plant was awarded the Arizona
13 Governor's Award for Excellence in Energy
14 Efficiency.

15 And John mentioned before, we were named
16 partner of the year for leadership in energy
17 management, and there were only two industrial
18 companies in the whole United States. The other
19 one was Toyota North America, which is pretty good
20 company to be in.

21 Conclusion. The program's been
22 successful, there are a lot of resources out there
23 for people to look at. We're also considering
24 financial awards as incentive for getting more
25 energy ideas, and our motto is "many a mickle

1 makes a muckle", which means basically that every
2 small contribution adds up to very significant
3 contribution, both for the bottom line and for the
4 environment.

5 And that's the end of my presentation.
6 And questions, I'd be happy to address.

7 MR. OLSON: For our next speaker I'm
8 going to call on Denise Michelson from British
9 Petroleum. Originally in our agenda we had Tom
10 Markin of the British Petroleum. Apparently he
11 had some kind of back injury and Denise has agreed
12 to give the presentation. So please welcome her.

13 MS. MICHELSON: Good afternoon ladies
14 and gentlemen. Thank you very much Commissioners
15 and staff, for the invitation. We really
16 appreciate the opportunity to participate in the
17 IEPR proceedings today.

18 As Tim mentioned, Tom Markin, our Vice
19 President of State Government Affairs, was
20 supposed to provide this presentation.
21 Unfortunately he sustained an injury that
22 prevented him from being here today. His
23 sincerest apologies, and we'd like to know if we
24 have to provide a doctor's note for the docket.

25 I'd like to share with you today a

1 little bit about BP's perspective on climate
2 change. A couple of programs that we have, and
3 we're really excited to be participating in in
4 California, and some global initiatives that we're
5 involved in.

6 First though I'd like to introduce BP.
7 It's the former British Petroleum Company, it's
8 now BP. It's an energy company with 100,000
9 employees in 100 countries across the world and we
10 have 45 percent of our assets in the United
11 States. In California we have a refinery in
12 southern California, a series of land and marine
13 terminals, pipelines, approximately 1,200 retail
14 gasoline outlets under the Arco umbrella.

15 Where do we stand? First, we try to be
16 very realistic. Any issue of this complexity and
17 scope cannot be solved by BP alone, it cannot be
18 solved by any single scientific breakthrough or
19 unilateral government action.

20 We believe there needs to be a broad
21 suite of options to address global climate change,
22 including flexible market mechanisms such as the
23 EU emissions trading scheme, technology, R&D into
24 issues like carbon capture and storage.

25 We support early action, and we've

1 demonstrated that in our program. Since 1997
2 we've cut our greenhouse gas emissions by
3 approximately 10 million tons of CO2 equivalent.
4 We believe that both government and business have
5 a role today in addressing the issue of climate
6 change.

7 We encourage government to acknowledge
8 the need to promote access to cleaner energy
9 sources in developing countries, and encourage
10 mechanisms to cost-effectively have greenhouse gas
11 emissions reductions in developed countries.

12 And while the scientific thinking
13 continues to evolve BP shares the current view
14 that we should aim to limit greenhouse gas
15 concentrations in the atmosphere to stop global
16 temperatures from rising more than two degrees
17 centigrade.

18 This is thought to be achievable if
19 concentrations of greenhouse gas emissions
20 stabilize in the 500 PPM range. Quantifying this
21 goal, based on today's best available science,
22 provides the focus for our action.

23 In California we're really pleased to be
24 a part of this very exciting demonstration project
25 as part of the Governor's Executive Order for the

1 hydrogen highway.

2 A couple of months ago we opened a
3 fueling station that was developed by BP and
4 Praxair, with support from the South Coast Air
5 Quality Management District, Los Angeles World
6 Airport, the US Department of Energy, and
7 naturally the California Energy Commission.

8 It provides hydrogen for five Daimler
9 Chrysler fuel cell cars and the hydrogen is
10 provided by onsite electrolysis. We also have the
11 capability to expand the system to fuel more cars
12 with hydrogen storage.

13 We have hydrogen fueling centers also in
14 Michigan, Florida, and California, and we have a
15 demonstration project in Europe and Australia to
16 look at different urban centers and how to safely
17 deliver hydrogen either using hydrogen from a
18 nearby refinery, electrolysis as in this case, or
19 making hydrogen from natural gas.

20 We're proud to be a member of the
21 California Fuel Cell Partnership, as you're aware.
22 This project brings together automotive and energy
23 companies with government to prove the
24 technologies' feasibility and to facilitate
25 bringing this environmentally friendly fuel to

1 market.

2 BP Arco. BP Solar is one of the world's
3 largest manufacturers and consumers of solar
4 panels. A number of our service stations are
5 powered by solar energy and these once again are
6 demonstration projects.

7 The energy is not sufficient to run the
8 entire AM/PM chain that we have or the service
9 station. It barely provides enough electricity
10 for the refrigeration of like the soft drink
11 refrigerators, so we have to purchase more energy
12 to supplement the solar energy.

13 We're the first, also in California
14 we're the first company to take solar panels to
15 the consumer with BP solar homes solution project,
16 in partnership with Home Depot. So if you want a
17 solar project for your swimming pool or water
18 heater all you've got to do is go to Home Depot.

19 Again, climate change is a multi-faceted
20 challenge that requires a multi-faceted response.
21 In doing our part we're focusing on three major
22 areas.

23 First is our operation and energy
24 efficiency. We try to enhance our capabilities in
25 delivering energy efficiency improvements and

1 energy management and make energy management and
2 best in class technology selection part of our
3 everyday decision making.

4 We have a special set aside of \$350
5 million of investment for energy efficiency
6 projects, and these are specifically for energy
7 efficiency projects over the next five years.

8 We use cogeneration, recognizing that
9 through less gas consumption and that the
10 cogeneration facility supports both electrical
11 generation and steam, it's a very efficient way to
12 go.

13 Also, I believe last week, we announced
14 a very exciting project in the UK. It's a
15 decarbonized fuel power plant project. 350
16 megawatts of energy with hydrogen as fuel. We'll
17 make the hydrogen from natural gas and sequester
18 the resulting CO2 emissions in depleting oil
19 fields in the North Sea, using that for enhanced
20 oil recovery.

21 COMMISSIONER GEESMAN: When do you
22 expect to begin construction on that plant?

23 MS. MICHELSON: The plant is expected to
24 come online in 2009, I don't know exactly when the
25 construction will begin.

1 For our customer facing businesses we're
2 going to continue to seek opportunities to shift
3 the balance of our business in favor of lower
4 carbon energy sources, in particular grow
5 ourselves of natural gas, and this is the supply
6 side of our activities.

7 Also, we help our customers to increase
8 their end-use efficiency by supplying clean fuels,
9 fuel efficient lubricants, which help the engine
10 to run not as hard, thereby reducing greenhouse
11 gases, and we support the CEC flex your power at
12 the pump, it gives the consumers little tips on
13 how to conserve energy and gasoline.

14 What role can governments play? BP will
15 continue to encourage governments and other
16 agencies to collaborate and implement effective
17 policies through advocacy. We need incentives to
18 industry to develop new competitive businesses
19 that will support both economic growth and the
20 journey toward stabilization.

21 As most of the expected emissions growth
22 will come from developing economies, we have an
23 opportunity for those parts of the world to lay
24 down infrastructure that's fundamentally different
25 from the way the developed world has evolved.

1 This is analogous to parts of the world
2 moving straight into mobile phone technology
3 networks ahead of the fixed line systems.

4 Once again, I've heard it several times
5 over the past two days, there's no silver bullet,
6 we need integrated action on three fronts --
7 appropriately time regulations provides a place
8 for markets, incentives and investments, and R&D.

9 COMMISSIONER GEESMAN: Can I ask, if you
10 would, to elaborate on what you mean
11 "appropriately time regulations?"

12 MS. MICHELSON: Appropriately time
13 regulation, BP has stated that we thought that a
14 mandatory cap and trade program would be one of
15 the options to consider for getting greenhouse gas
16 reductions, and we feel that the design will take
17 awhile, so we would like to use no regrets type
18 energy efficiency options until such a time as the
19 policies are in place for a well designed cap and
20 trade system with linkages, national and
21 international.

22 COMMISSIONER GEESMAN: Thank you.

23 MS. MICHELSON: You're welcome, sir. In
24 summary, recognizing that we are talking about
25 creating major new technological businesses, the

1 governments also need to create a space for
2 competition while ensuring their economies and
3 businesses fully participate in growth
4 opportunities.

5 We believe that market development is a
6 key step. Emissions trading schemes are very
7 important in engaging communities and customers
8 and addressing the problem of climate change.

9 And finally, to supplement the emissions
10 trading and other incentives governments need to
11 support R&D and demonstration projects for options
12 to reduce greenhouse gas emissions.

13 Thank you very much, and I'll be happy
14 to answer any further questions.

15 COMMISSIONER BOYD: Denise, on one of
16 your earlier slides you talked about developing
17 fuel efficient lubricants, and as you may recall
18 yesterday, we heard a speaker at the Advisory
19 Committee broach this subject of lubricants.

20 Can you provide us with more information
21 about what BP is doing in the area of fuel
22 efficient lubricants?

23 MS. MICHELSON: I certainly can, and I
24 can summarize a couple of initiatives that we have
25 and I can provide information for the docket

1 subsequent to this meeting.

2 In India we're looking at, we had a
3 demonstration project looking at multi-viscosity
4 lubricants, and we were able to demonstrate that
5 through use of these lubricants we had some
6 reductions in greenhouse gas emissions, tailpipe
7 emissions.

8 Also we had a project in London with a
9 fleet of buses where we used a different kind of
10 lubricant and that also resulted in some pretty
11 significant reductions in greenhouse gas
12 emissions, and I'll be able to provide a hard copy
13 for the docket.

14 COMMISSIONER BOYD: Thank you.

15 MS. MICHELSON: Thank you.

16 COMMISSIONER BOYD: One other
17 question/comment. I read ahead in your slide, you
18 had some supplemental slides in your handout.

19 MS. MICHELSON: That's not fair.

20 COMMISSIONER BOYD: Well, I salute your
21 generosity of providing extra information, but it
22 does result in a question or what have you. You
23 had this very interesting slide about, well, your
24 wedge slides about BP's program about stabilizing
25 global emissions and your one gigaton carbon

1 wedge.

2 It was interesting to note that, if I
3 infer properly, BP is talking about ICE
4 efficiency, meaning Internal Combustion Engine
5 efficiency, and part of your wedge is two billion
6 gasoline and diesel cars with 60 mile per gallon
7 rather than 30 mile per gallon fuel economy.

8 And I'm just wondering if BP is on
9 record as supporting government programs aimed at
10 increasing fuel economy?

11 MS. MICHELSON: I think that we leave
12 the fuel economy battle to the oil companies.
13 We've taken a neutral position on that in the
14 past.

15 COMMISSIONER BOYD: Ah, that's too bad.

16 MS. MICHELSON: And on these slides on
17 stabilizing global emissions I believe they are
18 from a study at Princeton. It looks like these,
19 what we call "wedges". And then it describes what
20 it takes in order to reduce the emissions from
21 those wedges.

22 And it's pretty significant.

23 COMMISSIONER BOYD: Yeah, I'm pretty
24 familiar with the wedge studies, but I was pleased
25 to see on an earlier slide, under stabilizing

1 global emissions, the "we" I presume to mean BP,
2 so I incorporated you into this. Thank you very
3 much.

4 MS. MICHELSON: Thank you.

5 MR. OLSON: Okay, I'd like to introduce
6 the next speaker on the list here as Roger Peters,
7 Senior Vice President and General Counsel of the
8 Pacific Gas and Electric Company. And Roger,
9 you're welcome to either come up here or --?

10 MR. PETERS: Good afternoon. I
11 appreciate the opportunity to be here today to
12 address the panel and Commissioners.

13 I think it's appropriate to follow BP in
14 the sense that PG&E obviously is a public utility,
15 so we're an interface, kind of looking at the
16 consumer as our customers as well and really our
17 vehicle for many of the policies that this
18 Commission implements and feel that that's an
19 important role to play, and we're very proud to
20 play that role.

21 You are very familiar with PG&E. I
22 suspect most people in the audience are, so I'll
23 just say that basically we serve gas and electric
24 to 14 million Californians, and that's one out of
25 every 21 people in the United States. So what you

1 do affects us and what we do affects the customers
2 that we serve.

3 We're pleased to be able to work with
4 the Energy Commission in its various activities,
5 and I want to take a moment to compliment the
6 staff on the various reports. I haven't read
7 through all of them but it's very comprehensive
8 and it's really good to se the Commission having
9 looked ag greenhouse gases for so long and be up
10 to speed on an issue that is important to all of
11 us.

12 In terms of PG&E, in terms of energy
13 efficiency, I should say that over the last
14 period, since we started energy efficiency, we
15 saved 135 million megawatt hours. I don't know
16 how many Seattles that is, but it's a significant
17 number, and I compliment Washington and its
18 activities, and we're very determined to move
19 ahead and save as many Seattles as we can.

20 In a sense as an intermediary I want to
21 talk about what we're doing within PG&E and then
22 what PG&E is doing as well, and I suspect that
23 many of you in the room are familiar with what I'm
24 going to say, but I just think it's useful to give
25 a perspective.

1 We see it both from a corporation in
2 America, a very large corporation, and also the
3 perspective of trying to help our customers find
4 the right way through their energy issues.

5 Our footprint, first, as a utility, and
6 keeping in mind that we've largely sold off our
7 fossil power plants, is a very small CO2
8 footprint. It's about 843,000 tons of CO2, just
9 from our inside operations, that is from the
10 plants we own, the gas pipeline operations that we
11 conduct, and then our various fleet and internal
12 operations.

13 So that's not a lot, but we focus on
14 that internal operation and break it apart. We've
15 got about 12 percent of that is fleet activity, so
16 we're very active in looking at our fleet. We've
17 got heavy trucks that we've converted to natural
18 gas vehicles, we're looking at other opportunities
19 as we move ahead to look at the various fleet
20 utilizations that we have -- what do we need,
21 where are we getting it, what type of fuel will it
22 use and so forth. So that's an important element.

23 About 35 percent of our CO2 footprint is
24 gas operations, and that largely is compressor
25 station operation for our gas pipelines. We also,

1 we have leaks that we control. We repair
2 pipelines when they burst if they do or need to be
3 replaced, so there's a lot of operational issues
4 there, and some of the items that were addressed
5 earlier in terms of methane are things certainly
6 that we're concerned with and trying to address.

7 And then the remaining about 46 percent
8 of our operations, our CO2 footprints, are our
9 fossil operations, and that's Hunter's Point,
10 which we're trying to shut down once the ISO
11 agrees that that's appropriate, and our Humboldt
12 plant to the north, which we have an RFP out for
13 replacement power for that.

14 I should say, in fairness, we do have a
15 proposal in front of the Energy Commission --
16 pardon me, the CPUC not the Energy Commission --
17 no Contra Costa 8, and so that will, to the extent
18 we shut down those plants that will adjust our CO2
19 footprint a bit.

20 So from an internal perspective, the way
21 we approach things, we've got an initiative on
22 green real estate issues, that is how do we manage
23 our property, how do we manage the operations of
24 our forestry areas, what kind of sequestration
25 should we be looking at, and largely at least at

1 this stage is looking at what we need to do to
2 make sure that the carbon sequestration that's
3 currently occurring in the forest doesn't get
4 eliminated by virtue of forest fires and so forth,
5 so a lot of it is tree permitting practices and so
6 forth at this point.

7 We have an environmental management
8 system we're putting together that really tracks
9 all of the operations, the targeted operations --
10 efficiency use within the company, waste disposal,
11 water use within the company, and that's overseen
12 by an environmental advisory committee of
13 officers.

14 So we keep our fingerprint on that and
15 try to put some metrics together and increasingly
16 are going to move towards that, that's part of our
17 view on our corporate responsibility report and
18 how we disclose our operations externally to the
19 world.

20 Let's see, and then as far as the CO2,
21 just generally, the tracking, I want to mention
22 that we're a charter member of the Climate Action
23 Registry and feel that that is a critical element
24 to any of the operations that we're talking about
25 here, corporations in America, be able to track

1 what your CO2 emissions are, because if you don't
2 know what they are you aren't going to make much
3 headway in terms of focusing where you want to go
4 with them.

5 So that's very briefly kind of the
6 internal perspective of PG&E, what we do on a day
7 to day basis internally.

8 Now obviously we have a very large
9 external facing, and I guess I would use customer
10 facing perspective. There's a lot that we engage
11 in.

12 From a perspective of what our CO2
13 emissions are, if you look at our overall
14 operations, that is our portfolio, we go from
15 843,000 tons total for PG&E into a delivered
16 energy mix which is about 16 to 18 million tons.

17 So obviously when we purchase power
18 we're purchasing power that increases our CO2
19 footprint. About half of that footprint, well,
20 about 43 percent of that, is natural gas, and
21 about 56 percent of that is carbon-free I guess
22 you'd call it hydroelectric, nuclear, and then
23 small hydro and things like that.

24 So you can see that a fairly large
25 amount of our footprint from the total portfolio

1 perspective is really accounted for by the power
2 that we purchase. There's a very small sliver of
3 coal that we purchase but largely it's natural
4 gas.

5 In terms of what we're doing, I think
6 the Commission is aware of the CPUC's efforts on
7 the procurement front. We supported the adder for
8 CO2 for purposes of evaluation of new resources.
9 We're in that process right now, looking at the
10 bids that we received.

11 We are moving ahead on renewables. I
12 think we will meet our 2005 requirements and I
13 think are a little bit over 12 percent now in
14 renewables.

15 Energy efficiency, I won't say much
16 about that. I know there was a lot of discussion
17 about that yesterday, and suffice it to say that
18 on a lot of fronts we're doing a lot of things and
19 trying to make sure that our customers are aware
20 of their options and their choices.

21 We've moved ahead at the PUC with an
22 automatic metering initiative, and that is to
23 install automatic meters in all of our customers'
24 homes. That will be over a multi-year period.

25 It'll provide us operational benefits in

1 terms of understanding where customers are out in
2 order to be able to give them better service, and
3 also some benefits in terms of pricing signals
4 ultimately, to see how that works, how that
5 responds, and whether there's demand response
6 potential there, that's something we're looking at
7 still.

8 In terms of other programs I'd just
9 mention, we try to look at I guess areas you'd
10 call linkage areas, and one would be where can we
11 take some action that's going to reduce the CO2
12 impact, and also provide benefits and more
13 efficient use of resources, and I think the diesel
14 conversion program that we proposed and that the
15 Public Utilities Commission recently adopted is a
16 significant program for the central valley.

17 We're also continuing to look at clean
18 vehicle programs, our natural gas vehicle programs
19 are increasing I think at a double digit rate and
20 the conversion of a natural gas vehicle from a
21 traditional gasoline fired or diesel vehicle
22 reduces the CO2 emissions by 20 percent.

23 So it's something that we're continuing
24 to look at and support, and believe that clean
25 vehicle programs are an important part to this.

1 One thing that we're looking at, I can't
2 say that we're that far along in assessing, is
3 again one of the linkage areas from a
4 transportation and energy perspective. And that
5 would be to look at whether you can take a hybrid
6 vehicle and turn it into a plug-in hybrid vehicle.

7 And the benefits there would be benefits
8 both in terms of use of offpeak resources to
9 charge that vehicle, if you change the battery
10 size of the plug-in hybrid you can essentially
11 have a 50 mile radius commute, so you're generally
12 commuting entirely on an electric vehicle and
13 presumably if they're charging offpeak you may
14 have an additional demand, at least for offpeak
15 renewables that come online, and also a place to
16 put some of the power that would otherwise be more
17 difficult to deal with.

18 So it's a situation, I can't say that we
19 have moved that far in it, but it's intriguing
20 enough to take a look at it and see if we get a
21 situation where you can have transportation
22 benefits, you can have benefits on the renewable
23 side, and to the extent that you're offpeak you're
24 probably also going to have additional revenues
25 and I should say, reminding the Commission, under

1 the programs that apply by the Public Utilities
2 Commission, to the extent that we sell more, that
3 our revenues are greater, those revenues go back
4 to our customers. So we're revenue neutral.

5 So if we can find ways to do a quick
6 fuel conversion, essentially, in that manner, that
7 would be better for our ratepayers, it would be
8 better for the environment, it will help the
9 renewable sector, and it seems to me something
10 worth looking at. So that's an idea to put out
11 there.

12 In terms of other programs, I guess one
13 thing I'll mention is we have a solar program as
14 well, at least with schools, trying to get some
15 solar assistance to school districts that are
16 always looking to find ways to save money, but
17 we're also using that as an opportunity to teach
18 the children in that school about energy, about
19 how it works, about the cost of energy and also
20 when we combine that with safety programs it's a
21 program that, from our perspective, works well, we
22 can work with the schools and it advances other
23 overall programs that we're supporting.

24 In terms of other elements, I think I
25 pretty much mentioned most that I wanted to. I

1 would say that when we look at energy audits these
2 days I think it's good, there's a conversion I
3 suppose from an energy audit generally but the
4 more we are facing CO2 it stands to reason that we
5 ought to be talking about energy audits and CO2
6 audits as well just to make sure that the people
7 that we deal with and that society generally gets
8 a better sense of what the CO2 impact is, what the
9 global impact is, to the extent that they have
10 opportunities to change.

11 I want to just summarize by going back
12 to a couple of points. One is that I want to
13 reinforce what Ralph said this morning with
14 respect to a common action plan.

15 It's very important I think that
16 publicly owned utilities, municipal utilities,
17 local governmental units, all are in this
18 together. That we find a way to make sure we're
19 on the same platform so we're moving in the same
20 direction and the information demands and the
21 information access is common so we know where we
22 are.

23 Again, once you measure, until you
24 measure you don't know where you are, until you
25 know where you are you can't know where you're

1 going.

2 We certainly support development of new
3 technologies and support this Commission's
4 research into that area. One thing I didn't
5 mention that I think is important as we look at
6 our supply chain we're trying to do more and more
7 is look at our suppliers to see whether they're
8 conscious of their CO2 emissions, whether they're
9 conscious of their environmental standards, and
10 trying to green up the supply chain in a sense to
11 make sure that we're not just looking at ourselves
12 in isolation.

13 One of the items that I mentioned
14 earlier, I think it's important as you prioritize,
15 if you can look at areas -- the comment about
16 water and hydro was a stark one today.

17 I think the hydro resource is going to
18 depend in part on the elevation of those
19 resources, how much above the snow line they are,
20 what's the porousness of the resource is, but it
21 certainly stands to reason that we need to look at
22 water, we need to look at transportation, we need
23 to look at energy.

24 We need to look at those in the way that
25 they interact with each other and find solutions

1 that touch as many of those three as we can, and
2 that's going to be a more sensible way to proceed.

3 And then finally I think it's important
4 to eliminate dis-incentives to act early. We're
5 out there acting with all the other parties on
6 this panel, in part we have a luxury in that
7 context and I'll admit it, of being revenue
8 neutral when we proceed with energy efficiency.

9 And so in a sense that it has been a
10 disincentive that has been removed from our backs,
11 and the result is what you've seen over the last
12 decade or more than that.

13 We have been supportive of energy
14 efficiency, conservation, moving ahead with those
15 resources, because it provides an opportunity for
16 our customers to get reliable service at cost
17 efficient prices with a perspective, a social
18 perspective, that we think they believe in and
19 they expect us to deliver for them as part of the
20 product.

21 With that I'll entertain any questions
22 or sit down. Thank you.

23 COMMISSIONER GEESMAN: Thank you very
24 much. There's a lot of discussion that I'm sure
25 you've heard about applying California standards

1 to out of state procurement to electricity. How
2 do you feel about that?

3 MR. PETERS: Well, I'm not sure if
4 you're asking me as a lawyer or a --

5 COMMISSIONER GEESMAN: I'll ask you as a
6 lawyer secondly, how do you feel as a corporate
7 officer?

8 MR. PETERS: Yes, I guess I should have
9 known that, I shouldn't have suggested the second
10 question, should I?

11 Well, I think, I'll go back to basics in
12 a sense. Our objective is to get a portfolio that
13 does deliver cost-effective, reliable energy to
14 our customers.

15 To the extent that barriers are crated,
16 either by imposing out of state or not imposing
17 them, then I think that that's a position that we
18 would caution at least the Commission in terms of
19 how it approaches it.

20 This Commission and the Public Utilities
21 Commission, certainly the Public Utilities
22 Commission in terms of its siting responsibility,
23 certainly has looked at out of state issues. And
24 I think that the second part of the question is,
25 in terms of what you impose, at some point you're

1 going to get into the question of state versus
2 federal power or regional power.

3 And we believe that, all else being
4 equal, the country as a whole ought to address
5 these issues. And that's our first preference.
6 Second, beyond that, would be regional, and then
7 third within California.

8 And so as you step out beyond California
9 I think you run into a lot of not only political
10 issues but legal issues in terms of how you do
11 that, and so it has to be done with care if it can
12 be done at all.

13 COMMISSIONER GEESMAN: I think we share
14 the notion that federal action would be
15 preferable, but we probably wouldn't be here today
16 if we were content to rely upon that.

17 So failing that federal action, and
18 obviously we've made some efforts to take a
19 regional approach with the state of Oregon, the
20 state of Washington, the Governor has also made
21 some efforts with respect to the Western
22 Governor's Association, but specifically as it
23 relates to procurement standards that might be
24 applied to greenhouse gas emitting generation
25 plants from out of state, is that something that

1 your company thinks would be an acceptable idea or
2 not?

3 MR. PETERS: I don't think we've reached
4 a position on that particular point. I think, as
5 we stand here, we're focusing on what we can do
6 here within the state to encourage the resources.

7 Obviously when you look at out of state
8 resources either existing or to be constructed
9 there has to be somebody buying at the other end
10 in order for most of those projects to go. So
11 whether the Commission has the authority to impose
12 those things, I suspect that's a difficult issue,
13 I'm not prepared to say one way or the other.

14 Simply because we haven't reached a
15 position on that, and I'll just leave it at that
16 point.

17 COMMISSIONER GEESMAN: Well, let's leave
18 the legal issue aside. Were there not legal
19 considerations and recognizing that the Public
20 Utilities Commission, and this Commission as well,
21 does take a certain fiduciary approach to the flow
22 of California ratepayer dollars, if those duly
23 constituted political authorities decided that it
24 was appropriate to apply out of state procurement
25 standards, how would your company feel about that?

1 MR. PETERS: You mean to apply
2 procurement standards to out of state resource?

3 COMMISSIONER GEESMAN: To out of state
4 purchases.

5 MR. PETERS: Well, I don't know at this
6 point that -- I don't know the answer to that. I
7 would rather not, it's an issue that I'm going to
8 pass on. Thank you.

9 COMMISSIONER GEESMAN: Well, let me say
10 that it is something that Commissioner Boyd and I
11 will probably take a crack at in our draft report
12 in early September, and one which the Commission
13 most likely will address in the adoption of a
14 final report in early November.

15 So if your thinking gels between now and
16 then we would appreciate any indication.

17 MR. PETERS: Thank you, Commissioner.
18 And I assure you, I'll think about it on the way
19 home. Perhaps there'll be some cases resolved at
20 that point and that may give us some idea about
21 the extent to which greenhouse gases or other
22 emission controls fall within the state
23 jurisdiction or not.

24 COMMISSIONER GEESMAN: Well, we would
25 appreciate learning anything that you could

1 provide us. And we will be having workshops in
2 mid-August on various coal combustion
3 technologies.

4 MR. PETERS: Okay. Once again, I would
5 say -- well, I'll leave it at that. Thank you.

6 COMMISSIONER GEESMAN: Thank you.

7 MR. OLSON: Thank you, Roger. And our
8 final speaker today is Dave Hermanson, General
9 Manager of West Coast Operations for Primary
10 Energy, and we've asked him to do a presentation
11 on combined heat and power and waste heat recovery
12 prospects.

13 MR. HERMANSON: Good afternoon, thank
14 you for allowing me to speak with you here today.

15 I was introduced to speak on increasing
16 energy efficiency in California. The first thing
17 I'd like to point out on our little slide is we've
18 done some EPA database searching, and the little
19 pushpins that would be almost visible to you guys
20 on this map are clustered around our population
21 centers, showing where there are recycled energy
22 projects that are yet untapped.

23 What strikes me is that they are
24 significantly clustered around the Bay Area, which
25 is also the hardest place to build a new

1 transmission line to get power into. So it just
2 begs the question of let's spur recycled energy
3 and maybe we don't have to site new transmission
4 lines through highly dense populated area.

5 A quick overview on Primary Energy. We
6 are a nationwide developer of recycled energy and
7 CHP projects. We are headquartered in Oakbrook,
8 Illinois, which is just outside of Chicago.

9 Here in California we have three
10 projects, serving navy bases around San Diego Bay
11 and selling the electrical output under a 30 year
12 firm capacity contracts with SDG&E, and then our
13 fourth site is in Oxnard, California, selling
14 again 30 year firm capacity through Southern
15 California Edison.

16 But the thermal host is a refrigeration
17 load for our produce packing house, so a different
18 use of a similar technology, traditional CHP
19 plants.

20 We're here today because California
21 wants three things -- reliable electric system, a
22 more competitive economy with good instate jobs,
23 and a cleaner environment with less pollution and
24 reduced greenhouse gas emissions.

25 We want all these things at the same

1 time, kind of like the old farmer's milk, we like
2 it milk stew. Any one of them is unbalanced,
3 we're unstable.

4 The good news is recycled energy meets
5 all three of these goals.

6 So what is recycled energy? It's a term
7 we probably haven't heard kicked around here too
8 much. Recycled energy is substituting knowledge
9 and capital for fuel, making productive use out of
10 another's waste.

11 Similarly, with any recycled process, if
12 you take a waste and convert it into a usable
13 product that's recycling. We do that with energy,
14 taking the energy from waste heat recovery, large
15 scale industrial processes with exhaust gas heat,
16 like a CHP plant, you have the gas turbine that
17 has the exhaust gases, the gas turbine's already
18 spun the generator, exhaust heat gases are
19 captured to make steam, and that steam is used for
20 various industrial processes or to make more
21 electricity.

22 Capture combustion of off gases from
23 refineries or steel mill, we have some steel mills
24 in Indiana I hope to show you at the end if we get
25 some questions, marvelously green power, no

1 additional fuel burned, and we're making I think
2 it's, well 90 megawatts at one site.

3 And then capturing use and pressure
4 changes, as a working fluid natural gas or steam
5 drops from high pressure to low pressure. You can
6 capture that energy change and generate more
7 electricity or steam or refrigeration, depending
8 on what your need at that site is.

9 Really, bottom line, we're just talking
10 about increasing energy efficiency.

11 So, back to our reliable electric
12 system. Recycled energy creates more supply with
13 more additional fuel because we are, again,
14 increasing the efficiency. It's always
15 distributed generation, there's not a central
16 generation plant at the end of a long transmission
17 line, it's distributed throughout our industrial
18 neighborhoods.

19 And with that dispersed generation we
20 get greater grid stability and security because
21 it's dispersed, not intermittent. Now let me
22 clarify that. Like my Oxnard plant -- forgive the
23 personal pronoun -- our Oxnard plant operates 42
24 percent of the year. That may seem at first brush
25 as intermittent, however it's the Edison on and

1 mid-peak period.

2 So it's those hours of highest
3 electrical demand that we operate. So again the
4 utility can forecast when our supply will be
5 provided to them to serve their customers.

6 So it doesn't necessarily have to be
7 continuous baseload, although it's an extremely
8 good fit for many industrial processes. Like the
9 concrete plants, we don't shut down very often at
10 all.

11 I'm sure if the API guy was here as well
12 he would tell you refineries try not to shut down.
13 And industrial processes are almost continuous.
14 Because we're distributed you're then minimizing
15 your investment in transmission distribution and
16 expansion and invest. We're right here, you can
17 tap into it now.

18 We can also provide backup power to the
19 grid in emergencies.

20 A more competitive economy. Again,
21 we're generating more power with no additional
22 fuel. California Cogeneration Council has
23 estimated that, due to the efficiency of the fuel
24 efficiency of their cogeneration plants in
25 California, getting two end products from the one

1 fuel source, that's mitigated this demand for
2 natural gas, and therefore with the reduced demand
3 the fuel prices are lower than they otherwise
4 would have been, and that's saving us about \$250
5 million a year that's enjoyed by all customers of
6 natural gas.

7 We're reducing fuel cost by shifting the
8 supply/demand curve. If you have your own
9 industrial plant and you become more efficient
10 those savings accrue to you.

11 We just heard about how much energy
12 savings the concrete guys are finding in their
13 plants, and using them to stay more competitive.

14 Typically on CHP your recycled energy
15 plants, the hosts are manufacturers with good high
16 paying jobs. We want to retain those in
17 California, because if you have a manufacturing
18 core that in turn helps the surrounding
19 businesses. We all remember our economic class
20 where the payroll comes home, gets turned over in
21 the town seven or eight times. If we have a
22 healthy industrial core in California we'll have a
23 very good economy in California.

24 The primary focus today though is on
25 greenhouse emission gases. We squeeze more work

1 out of the fossil fuels being burned, that reduces
2 any additional fuel being burned, so you get less
3 emissions, no additional emissions in many cases.

4 By generating at recycled energy plants
5 you have less generation at the single use central
6 generation facilities, and reducing the generation
7 and the emissions produced by those facilities.

8 We also then reduce the generation
9 needed to compensate for the line losses to move
10 from a central generating facility to the
11 customer, because we are generating right in the
12 load centers.

13 Historically, this audience is very well
14 versed in this so I'll just blow through this, but
15 back in California our approach to generation was
16 central plants, we have an aging fleet in
17 California that averages somewhere between 35 and
18 50 years old.

19 Technology at the time for pollution
20 control is nowhere near as good as it is today,
21 but you take those plants, you put 100 units of
22 fuel in, you convert that fuel into electricity,
23 you have a byproduct of waste heat, fill the
24 transmission grid to get that to an end use
25 customer, that transmission grid would cost you

1 about nine percent losses with all the step up
2 step down transformers.

3 So consequently, by the time you get to
4 your end use customer he's got 33 units of
5 electric energy and 67 units of energy were wasted
6 out of that 100 units of fuel that went in to it.

7 In California a few years ago, late
8 80's, early 90's, we started building CHP plants.
9 Technology at the time was much improved for air
10 emissions. You take this same 100 units of fuel
11 going in to a CHP plant, the transmission and
12 distribution grid is much more minimized because
13 we're generating at lower voltages or using that
14 power onsite at our end use facilities, recycling
15 the energy coming off the back end of the plant,
16 and we got on average 33 units of electricity, 33
17 units of thermal energy, and 33 units of waste
18 energy.

19 The gentleman from API said some of
20 their plants go higher, it is a function, on
21 efficiency it is a function of what your end use
22 requirements are, primarily temperature driven. I
23 know if you have a large refrigeration need you
24 can drive this 33 units of waste energy with a
25 chilled water loop down to almost, you use 23 more

1 units of energy so you have only ten units of
2 waste energy.

3 Very tight thermodynamic cycle, great
4 efficiency. But generically typically you have
5 about 66 units of useful work.

6 Recycled energy, we're taking an
7 industrial facility that has an energy intensive
8 process, he needs electricity and process fuel to
9 run that process, and the reason they're in
10 business is to make finished goods, and an
11 unintended byproduct is waste energy.

12 We add an energy recycling plant and
13 with the energy we've captured we can make
14 electricity, steam, hot water or refrigeration.
15 Consequently then we need less electricity input,
16 less process fuel input, because we have recycled
17 energy internally, and at that point we're making
18 less waste energy at the back end.

19 CO2 emissions and energy policies.
20 Basic steps here. CO2 emissions are a function of
21 the carbon content of the fuel times the amount of
22 the fuel used. Real basic equation.

23 We've done a great job in California.
24 We're looking to reduce this carbon content.
25 Geothermal, wind, hydro, there's no carbon in any

1 of those fuels, consequently there are no CO2
2 emissions produced.

3 And we've had policies that have
4 stimulated that section of our generation
5 portfolio. But what have we done to reduce the
6 amount of fuel used? That's where we need to
7 focus now.

8 We can have an energy efficiency
9 portfolio. The gentleman from PG&E was just
10 saying we look at our supply portfolio and try to
11 get that to be more green. Well that's exactly
12 right. We're looking at recycled energy plants to
13 be part of the utility portfolio.

14 The more efficient we can get this to
15 be, reducing the amount of fuel used, and we'll be
16 reducing CO2 emissions.

17 So does California have recycled energy
18 potential? Yeah. We've accessed a few databases
19 maintained by EPA and the oil industry and we
20 estimate, between waste heat recovery and
21 industrial off gases we can get about 960
22 megawatts in California. Through pressure drops
23 and natural gas expanders another 124 megawatts.

24 And typically with the pumping of oil
25 between 400 and 600 megawatts. This is probably a

1 little understated due to how do you get data on
2 someone else's process.

3 The people who report to EPA, it's not
4 as detailed as you would like to have, so this is
5 a pretty good estimate.

6 Let's round that off to 1,600 megawatts
7 of recycled energy. This would offset existing
8 California power sector emissions by 6.6 percent
9 for CO2, six and a half percent sulphur dioxide,
10 NOX down six and a half percent, and mercury 3.2
11 percent of the existing California supply
12 portfolio.

13 If you offset out of state coal imports
14 you could triple these values, and that's the
15 magnifying power of energy efficiency, as we do
16 many good things, so recycled energy alone could
17 hit almost eight percent of California's 2010
18 greenhouse emissions target, just with the
19 recycled energy projects.

20 Well, the obvious question is why aren't
21 we doing more recycled energy now? Everything
22 we've been talking about has been good news.
23 Optimal choices are blocked by conventional
24 wisdom, homilies that sound true but really should
25 be given a second look to determine if they are

1 true.

2 All the power needs to flow through
3 wires, central generation provides economies of
4 scale, exit fee burdens are created by new
5 technologies, fixed costs increase for remaining
6 customers.

7 Why do fixed costs increase when we have
8 increasing load in the state each year? It seems
9 like the denominator and the numerator on that
10 equation aren't matching up in my eyes.

11 These homilies are often manifest as
12 regulatory obstacles. We no longer have standard
13 offer contracts, we have punitive standby rates,
14 exit fees, discount rate retention deals. There's
15 no incentives for people to invest in energy
16 efficiency, it's hard to get.

17 So the result is management focuses on
18 their core business, not making available energy
19 operations. I've talked to too many people and
20 it's like, "we're a paper company, we want to make
21 paper. I don't want to have to coordinate with
22 the ISO when I want to have excess power going out
23 on the grid." That's just not likely for a
24 manufacturer to do, it's almost impossible.

25 Consequently, we're here at the cusp of

1 a win/win opportunity. Modest energy policy
2 changes can induce optimal choices. We can lower
3 energy costs, lower the cost of fuel use and
4 emissions, increase energy security and
5 manufacturing competitiveness.

6 All we've got to do is think about that
7 central generation as the default paradigm. Let's
8 put that at the end of the line and think about
9 other things to put in front of the line as how we
10 want our next generation of energy to be provided
11 to us.

12 Modernize rules that create those
13 barriers to efficiency, fix environmental rules to
14 reward efficiency, and reward all players for
15 installing that efficiency.

16 Specifically, what do the Energy
17 Commission, PUC and Cal EPA need to do? As we've
18 recently been discussing, we have to include CO2
19 in our investment decisions now in order to not
20 have to undo those decisions later on.

21 So history says mandates will provide
22 the incentives to drive innovation of technology.
23 We need an energy efficiency mandate but don't
24 think of technology. I can go home and install a
25 fluorescent light bulb and not have to pay an exit

1 fee compared to my incandescent light bulb, even
2 though I'm using less energy.

3 I try and make my process at work more
4 efficient, no, no, now we need an exit fee. We
5 can't zero in on technologies like that. We have
6 to reward all the efficiency.

7 Now before we get excited about my
8 loading order statement, I've heard wonderful,
9 strong, pointed language on loading order from the
10 Energy Commission. However, you go down the river
11 to San Francisco and we have a year long process
12 to determine what are we going to do when cogen
13 contracts expire?

14 Why is that so hard to figure out?
15 Cogen contracts were put in because we needed
16 energy efficiency back in the 80's. We still need
17 it today. Let's extend the contracts or make it
18 look better.

19 Now granted, some of our contracts to
20 the '04 would not be done today, but the standard
21 offer two was a great contract. It provided firm
22 capacity supplied to utility with an energy price
23 that was adjusted month by month. You didn't have
24 anyone hung up on a forecast.

25 These standard operating contracts

1 provide a steady market for the power that
2 recycled energy can provide and provide some
3 financing incentives that you can go to the bank
4 and get a loan to build your own plant with.

5 So bottom line, again, more power less
6 fuel. Cleanest power possible, no incremental
7 emissions. Distributed power has great
8 reliability and energy security, non-intermittent
9 energy supply. The utility can forecast with
10 great reliability when that power will be
11 delivered such that they can forecast how they
12 meet their peak loads.

13 Little transmission and distribution
14 investment, minimum line investment, because we
15 are out there in the industrial sector where there
16 is large energy needs, and we make California
17 manufacturers more competitive.

18 And the best news of all is there's no
19 unintended consequences. Sometimes, California
20 being on the leading edge of energy policies has
21 produced unintended results. But recycled energy
22 and CHP just make California more efficient.

23 So, thank you for listening. Any
24 questions?

25 COMMISSIONER GEESMAN: Thank you, Dave.

1 I should say that it was ten months ago, in this
2 very room, we have one of our quarterly Energy
3 Action Plan meetings, and the question of the
4 existing QF contracts that are starting to roll
5 off came up.

6 And there was not a single member of
7 either the Energy Commission or the Public
8 Utilities Commission that didn't speak up and
9 indicate that each of us believe those contracts
10 ought to be extended.

11 The PUC staff articulated what I
12 characterized as a Goldilocks policy, which all of
13 us embraced, which is we don't want to pay too
14 much, we don't want to pay too little, we want to
15 pay just the right amount.

16 Since then our staff has indicated that
17 Southern California Edison, which we tend to take
18 as a coal miner's canary for QF contract
19 extensions, has projected that they expect to
20 renew about 90 percent of their expiring QF
21 contracts.

22 And I've gotten correspondence from
23 people in the industry strongly contesting that
24 projection, but let me also say that you should
25 review the comments submitted by the several CHP

1 trade associations and if you have anything to add
2 to their comments, this train is about to leave
3 the station and I do expect Commissioner Boyd and
4 I will have something to say on this subject in
5 our September draft.

6 MR. HERMANSON: Okay. Thank you.

7 COMMISSIONER BOYD: I would say we've
8 been very positive proponents for a long, long
9 time so you're preaching to the choir here, and
10 hopefully we can move this ball down the field a
11 little better. Thank you very much.

12 MR. OLSON: Commissioners, I have a
13 couple of questions for the panel, and then if you
14 wanted to ask others or open it to the rest of the
15 group here.

16 Maybe this is more of a clarification.
17 What I've heard today and at other workshops for
18 the Energy Report is that there are quite a few
19 proposals or initiatives or recommendations that
20 are centered around either expanding or extending
21 some existing programs or continuing existing
22 utility rebate efforts or existing initiatives
23 whether they are tax credits or whatever.

24 And one of the questions I have is are
25 there any specific greenhouse gas emission

1 reduction initiatives that you're suggesting on
2 top of that, or is this just a matter of, it's an
3 adder to the existing efforts, or is it a matter
4 of that plus a real good accounting or recording
5 system to track greenhouse gas emissions.

6 And if you're prepared to provide some
7 kind of response today that would be good, but I
8 think from our standpoint the more you can
9 clarify specific greenhouse gas emission reduction
10 initiatives or recommendations we'd appreciate
11 that for our Energy Report.

12 Anybody have a response today? If not,
13 we'd like to see it in your comments.

14 And I guess the other question I have
15 is, many of you are industry leaders. You are the
16 early adopters, if you want to call it that, yet
17 in many ways you're not getting any what I would
18 call financial asset value for your effort.

19 And lacking -- there was a lot of
20 controversy and discussion yesterday about the cap
21 and trade policies, but lacking a cap and trade
22 policy, to what extent is that a factor and
23 whether you're interested in capturing that asset
24 value of your actions that you've previously taken
25 or you want to take in the future?

1 And, you know, maybe, not to put
2 everybody on the spot here, but maybe to start
3 with the cement industry. Do you have any
4 comments on that approach, because you're one of
5 the real leaders in this area.

6 MR. BENNETT: Well, I appreciate the
7 recognition of the leadership, but we're probably
8 also one of the industries that, because of the
9 chemical process that we have, the release of CO2
10 emissions are associated with calcining limestone.

11 Our greenhouse gas reductions are
12 primarily on the energy efficiency side. We
13 believe that there are a number of incentives in
14 the marketplace that work towards that and should
15 be continued to be exploited as policy.

16 We believe that we should look first at
17 removing disincentives in the marketplace for
18 achieving these energy reductions and energy
19 efficiencies, and that cap and trade, at least for
20 us, or a hard cap, is something that's going to
21 have significant negative effects on the economy
22 of California.

23 We'd provide a very, very basic, one of
24 the most basic components for our infrastructure,
25 and if our per capita consumption continues to go

1 up, when you look in the state on the reliance on
2 things like the lead program, one of the
3 foundations for that is to go in with more energy
4 efficiency and buildings just as the one we're in,
5 it was designed and built with concrete for a very
6 specific reason.

7 You don't want to throw the baby out
8 with the bathwater. There may be industry sectors
9 who, as we've heard today, may embrace this
10 concept of cap and trade because they go into it
11 with lots of credits in the process, but by and
12 large we cannot support that type of program and
13 we think it has very dark consequences for the
14 states' economy, with respect to operations.

15 But that does not lessen our commitment,
16 nor our action plan, with respect to greenhouse
17 gas.

18 MR. OLSON: Any other comments? Russell
19 Jones or Denise, do you have any comments on that
20 question? And it's not so much supporting or
21 defending a cap and trade, it's lacking a cap and
22 trade system how would you capture the asset value
23 of your reduction values other than through
24 corporate to corporate trading?

25 MR. JONES: Well, you can look at the

1 emission reduction value two ways. I mean,
2 particularly if it's CO2, and ignoring the cement
3 situation of a process emission, if you're
4 reducing your CO2 emissions from energy use you're
5 reducing your energy use.

6 That in itself gives you asset value.
7 Whether you want to go beyond that, some people
8 do, some people don't. Our members generally are
9 not enthused about going beyond it at this time,
10 we think a voluntary approach is a way to really
11 help society identify the low cost options
12 producing emissions, and we ought to do those
13 first.

14 MR. BENNETT: And I would echo that
15 view. You saw that even in the round, sort of
16 savings that were, that Steve put up there. These
17 are significant to us. When you take a plant that
18 has a \$1 million a month electricity bill, getting
19 a three or four percent reduction in energy is
20 significant.

21 We've accomplished that in a year or
22 two. There's more out there for us in
23 efficiencies across the board. We'll go after
24 those, those have paybacks. We're quite
25 comfortable with that as our return.

1 MS. MICHELSON: And I think that we
2 would agree that, with lack of a system in place,
3 market mechanism system, that we would go with
4 voluntary. We had our own voluntary cap and trade
5 program which helped us, it's like a learning
6 process, it's a case study.

7 And I think we would agree with no
8 regrets actions and energy efficiencies to get
9 those reductions, but at some point energy
10 efficiency is only going to get you so far. And
11 there needs to be other options, whether it's
12 technological, which I don't believe exists for
13 some industries at this point, or a market
14 mechanism to take you that further step.

15 MR. OLSON: Okay, Commissioners, do you
16 have other questions of the panel? Do you want to
17 open it up to Public Comment at this point?

18 COMMISSIONER GEESMAN: Let's go to
19 Public Comment. I have one blue card from Joe
20 Sparano, WSPA.

21 MR. SPARANO: I'm not dressed for the
22 event. I did have to ask you, while I'm preparing
23 myself and covering my tracks here, what's with
24 the coal miners canary bit?

25 COMMISSIONER GEESMAN: Well, there are

1 those that suggest that the Southern California
2 Edison Company has been particularly hostile to
3 the renewal of QF contracts, and in fact last
4 year, when we reviewed their submittals to the
5 CPUC's procurement process a very small proportion
6 of QF contracts were projected for renewal by the
7 Edison Company.

8 I'm told by our staff that this year
9 that assumption has changed to 90 percent, so that
10 analogy may be a bit strained, but the canary
11 would appear to be off the bottom of the cage and
12 up on the perches.

13 MR. SPARANO: Got it. Thank you, I'm
14 enlightened to no end.

15 COMMISSIONER GEESMAN: Did that allow
16 you to recover yourself?

17 MR. SPARANO: Yes, thank you, I'm so
18 transparent.

19 Good afternoon, my name is Joe Sparano,
20 I'm President of the Western States Petroleum
21 Association. WSPA represents 26 companies that
22 explore for, produce, refine, transport and market
23 petroleum and petroleum products in California and
24 in five other western states.

25 You heard earlier today from API's Dr.

1 Russell Jones -- API represents our industry on
2 the national scene and is very involved in global
3 climate change issues.

4 Russell presented information about
5 API's three part program called the Global Climate
6 Challenge, which has been established by our
7 industry specifically to address the long-term
8 risks of climate change.

9 I'd like to provide some information
10 about WSPA's ideas for addressing climate change,
11 and about our policy.

12 Let me say first that we do appreciate
13 the opportunity to provide comments here this
14 afternoon. Unfortunately we've had little time to
15 review the 600 plus pages -- I'm saying that a
16 lot, Commissioners. That may sound hollow, but in
17 this case it's the same as it has been before.

18 A lot of information --

19 COMMISSIONER GEESMAN: Try reading the
20 information for 45 successive hearings.

21 MR. SPARANO: No, I know, I was going to
22 say, a lot of information but not near as much as
23 the two of you have to grapple with, but still, a
24 considerable amount to try to digest and give you
25 meaningful input on the excellent work done by the

1 staff.

2 COMMISSIONER GEESMAN: I took it, Joe,
3 as just a transparent effort on your part to
4 demonstrate empathy for Commissioner Boyd and
5 myself.

6 (laughter)

7 MR. SPARANO: I'm done. No. We have to
8 stop doing this.

9 Actually no, sincerity is really my
10 strong suit, and I was being sincere.

11 But based on our preliminary review of
12 the CEC reports, we agree and appreciate that, at
13 the California level, there ar still some
14 uncertainties about several elements and regional
15 details concerning climate change.

16 This morning I had an opportunity to
17 hear Dan Cayan review some of these in his
18 presentation. The uncertainties reflect the
19 imperfect scientific understanding of how the
20 climate system responds to increasing greenhouse
21 gas emissions and other disturbances.

22 The staff report also notes that when
23 looking at climate projections for California it's
24 important to emphasize that there's a high level
25 of uncertainty in regional projections.

1 To address this staff introduced the
2 concept of adaptive measures and indicated that
3 identification in the medium and long term would
4 be a priority. Given the uncertainty of the
5 science, using adaptive measures to provide some
6 flexibility sounds like a good concept.

7 In the sections specific to energy
8 demand the report notes that climate change adds
9 an additional level of uncertainty for some energy
10 demand forecasts, or that other factors such as
11 population and economic growth seem to have more
12 impact on final energy demand. And we agree with
13 that conclusion.

14 WSPA also supports the suggested effort
15 to ensure sound science guides the path forward.
16 Two specific areas of interest to us are the need
17 to identify conservation strategies and the
18 potential to sequester carbon dioxide in marginal
19 natural gas or oil fields in California while at
20 the same time increasing natural gas and oil
21 production.

22 CO2 has for some time been used in third
23 stage recovery enhanced oil recovery, particularly
24 in heavy oil fields, and California happens to
25 have an abundance of them.

1 We will be reviewing the staff's reports
2 in their entirety, and with more detail we'll
3 provide written comments by your July 22nd
4 deadline.

5 Moving on, I'd like to next make some
6 observations about the mission of the CCAC, pose a
7 question, and then provide WSPA's perspective
8 relative to global climate change issues.

9 Today's meeting notice says the stated
10 purpose of the Climate Change Advisory Committee
11 is to, and I quote, "make recommendations to the
12 Energy Commission on the most equitable and
13 efficient ways to implement international and
14 national climate change requirements based on
15 costs, technical feasibility, current energy and
16 air quality policies, and greenhouse gas
17 emissions reductions and trends since 1990."

18 In addition, there is the Governor's
19 greenhouse gas Executive Order and the tasking of
20 the Climate Action Team with implementing global
21 warming emission reduction programs.

22 Our question for your consideration is
23 how will the input of the CCAC into the 2005 IEPR
24 be coordinated with future programs developed by
25 the new Climate Action Team and the rest of the

1 state agencies? I think that is something that
2 may be worth looking at as part of the
3 Commission's task forward.

4 After attending yesterday's CCAC meeting
5 I believe much has been learned about climate
6 change, and I certainly personally learned more
7 than I knew before attending that session.

8 We all recognize that it is a complex
9 and long-term public policy challenge. In
10 particular, the petroleum industry is very
11 complex. As you heard from Russell earlier this
12 afternoon, much of the specific greenhouse gas
13 emission data and inventory information related to
14 our operations are still in various phases of
15 development.

16 Examining the mission statement of the
17 CCAC, it's noteworthy that costs and technical
18 feasibility will be key factors in the selection
19 of recommended strategies. And since we have not
20 fully reviewed the CCAC documents yet I can't at
21 this time offer WSPA's opinion on whether those
22 two criteria have been adequately considered.

23 Hopefully we'll have a chance to do that
24 and provide you our opinion in the written
25 testimony.

1 WSPA companies do recognize that
2 increased concentrations of greenhouses may lead
3 to adverse changes in global climate. As
4 illustrated in the API presentation, our industry
5 agrees with the CCAC's mission statement in the
6 sense that we support national and international
7 greenhouse gas policies, programs and solutions.

8 However, we're concerned about any
9 action taken by the state of California to
10 implement policies on a state level basis that
11 might otherwise be managed at the national and
12 international levels. And I think you've heard a
13 few of the panelists this afternoon say the same
14 thing.

15 WSPA believes that local or regional
16 efforts, conducted independently, may not be
17 implemented consistently. These types of efforts
18 can result in inequities between instate and out
19 of state investment opportunities and even
20 business financial results or financial
21 performance.

22 The possible competitive disadvantages
23 to California businesses may cause significant,
24 harmful economic impacts on the entire state.

25 WSPA's other main level of concern is

1 related to proposals that propose unilateral state
2 mandates to reduce greenhouse gas emissions. Our
3 members instead support urging voluntary actions
4 that accomplish results through cost-effective
5 energy efficiency technologies and programs.

6 And I think Russell did a terrific job
7 of explaining why and how that's important to our
8 industry and why it works as almost a natural fit
9 with the amount of energy that our members use and
10 the amount of money we spend on energy use.

11 WSPA members have also encouraged
12 customers and suppliers to utilize energy
13 efficiently. For example, WSPA supports
14 California's voluntary Flex Your Power at the Pump
15 Program, a campaign to educate consumers on things
16 they can do immediately to utilize motor fuels
17 more efficiently.

18 Our industry has also been very active
19 in the research and development arena. This is
20 where the issue of climate change, and our role
21 with respect to greenhouse gases, is being
22 studies.

23 There are also several site-specific
24 issues that need to be addressed concerning the
25 long-term storage or sequestration of CO2.

1 Overall there are significant petroleum industry
2 research dollars being applied to the development
3 of cost-effective technologies to reduce
4 greenhouse gas intensity.

5 To address one issue clearly, WSPA does
6 not support a mandatory cap and trade program.
7 Nor do we support the development of a credit
8 trading program specific to California or any
9 other state.

10 However, we do support voluntary
11 national or international programs that provide a
12 greater balance between emissions reductions and
13 the benefits they create, and the cost to the
14 economy and the citizens of the state of
15 California.

16 For example, our companies support
17 voluntary participation in larger scope national
18 credit trading programs like the Chicago climate
19 exchange. And I guess here I've used a word that
20 I've often used before the Commissioners, and that
21 is balance.

22 As in many of the other issues that you
23 are faced with every day in discharging your
24 duties, and our industry is faced with in the
25 manner in which we behave with respect to the

1 environment and public contributions that we make,
2 there needs to be a balance between what we
3 produce and how we produce it and what effect that
4 has on the environment, and I think there's very
5 little difference in the case of climate change.

6 WSPA also supports sensible climate
7 change policies that foster real technological
8 solutions that allow for economic growth.
9 However, these policies need to encourage
10 voluntary actions, not programs that mandate by
11 command and control, and not those that force
12 expensive requirements or that contain mandatory
13 reduction targets.

14 In summary, the issue of climate change
15 is, by its very nature, a global issue that we
16 believe should be addressed on the national and
17 international level.

18 Because the issue is global in scope,
19 mandatory reductions of greenhouse gas emissions
20 in California or the western region are not likely
21 to have a measurable impact on climate change, and
22 could in fact result in a negative impact on
23 California's economy.

24 I would like to re-emphasize, as I
25 close, our belief that state only or regional only

1 programs should use voluntary measures, not
2 mandates, to avoid putting California at a
3 competitive disadvantage.

4 We believe it is ill advised to
5 establish planning priorities that could damage
6 the economic health of the state without having a
7 clear indication of a measurable and favorable
8 impact on climate change.

9 I want to confirm that our industry is
10 committed to taking action to address greenhouse
11 gas emissions. WSPA supports voluntary policies
12 and programs that are nationally or
13 internationally based, including voluntary
14 reporting programs or audits.

15 We also support cost-effective energy
16 efficiency measures that reduce greenhouse gas
17 intensity as well as research into and development
18 of those technologies.

19 As we understand, part of the
20 responsibility of the Energy Commission and the
21 development of the IEPR is to balance the many
22 energy needs of California and its consumers in
23 order to develop a solid, broadbased energy policy
24 and supply strategies for the state.

25 WSPA believes that the Commission should

1 review the results and recommendations of the
2 Climate Change Advisory Committee with these
3 broader goals in mind.

4 Once again, I thank you for allowing me
5 the time to offer WSPA's input on this subject,
6 and would be happy to answer your questions.

7 COMMISSIONER GEESMAN: Thank you, Joe.
8 Let me respond to two of the points that you
9 raised, or try to. One as it relates to the
10 regional impact of climate models.

11 I'm not a scientist, I'm a lawyer, and I
12 think that you can probably appreciate that,
13 ultimately for somebody like me, this is a
14 question really of the weight of the evidence.

15 I think that's true at the international
16 level in terms of the various global models that
17 are used in this field, and having followed this
18 subject for a number of years now I do sense a
19 certain growing weight of the evidence among
20 qualified scientists, and I think some of your
21 remarks here this afternoon reflect some change in
22 what would appear to be that weight of the
23 evidence.

24 I don't think your industry would have
25 said some of the things that you've said today

1 five years ago, for example. As it relates to
2 regional effects shown by any of those models, if
3 you or any of the experts available to you feel
4 that there is evidence that we should be aware of
5 or a different take on the modeling I would
6 strongly encourage you to make that available to
7 us.

8 If not within the time frame of this
9 year's IEPR cycle, certainly thereafter. Because
10 I do think it would be of value.

11 And I think some of the comments from
12 the experts we heard this morning suggested some
13 appropriate hesitancy about generalizing from
14 modeled results where measured results are simply
15 unavailable.

16 So I do think we can proceed with an
17 appropriate level of humility here and not
18 overgeneralize from the modeled results that are
19 presented to us.

20 Secondly, as to how it relates to how
21 the IEPR report will feed in to the Governor's
22 effort to develop a plan by the beginning of the
23 year, we're probably not the right people to ask.

24 I can only venture the guess that we'll
25 probably be an early draft of the energy sector

1 related portions of that later report. That would
2 seem to me the most logical course of events, and
3 I think you probably should regard our output in
4 that fashion.

5 MR. SPARANO: I appreciate both the
6 comments, and I'm certain you got my message from
7 our industry, and that is there are these two
8 efforts going on, and we ought to be very sure
9 that, as each of the groups begins adopting
10 measures or taking and using recommendations that
11 they are synchronized in a way that makes the
12 ultimate report and plan forward a uniform one,
13 and one that all of us who are affected by it and
14 who work with it have some ease in handling it and
15 understanding what's asked of us.

16 COMMISSIONER GEESMAN: I think that's
17 reasonable.

18 COMMISSIONER BOYD: Building on what
19 Commissioner Geesman just said and the dialogue on
20 the question you asked of us, the interface of the
21 CEC's IEPR and its Climate Change Advisory
22 Committee, and even as it relates to our CPUC
23 partner who, with whom we have the Energy Action
24 Plan agreement and climate change is referenced
25 there visavis Cal EPA and the Climate Action Team,

1 hopefully Secretary Lloyd's attendance here today
2 and his statements telegraph a knowledge of each
3 other's actions, a cooperative and hopefully
4 seamless interaction being established to make
5 sure that the state acts in concert and is
6 internally consistent.

7 Secretary Lloyd would have been with us
8 all day today but to his, I wouldn't say horror,
9 but surprise, he recently discovered that his
10 office had scheduled a Climate Action Team meeting
11 this afternoon on top of our workshop here, for
12 which he, as I say, was somewhat surprised to
13 learn.

14 And so he not only had to leave but he
15 drew away our PUC and a lot of our staff from our
16 Executive Office to that meeting. But rest
17 assured we're plugged in to each other as best we
18 can.

19 One might point out that the CEC's been
20 at climate change for over ten years and others
21 are a little newer to the area, so we have a lot
22 to contribute to that process. You heard a lot
23 about the research that's been going on.

24 So those issues are being worked out.
25 The Advisory Committee was established and

1 authorized in statute for the Energy Commission
2 well in advance of the Pavley bill and its
3 ultimate enactment, and certainly in advance of
4 this Governor and the Governor's recent policy
5 pronouncement.

6 So it's charge has been to give us what
7 it can along the lines of the charge that you
8 referenced, in time for us to have meaningful
9 recommendations in our 2005 IEPR, and as you heard
10 discussed yesterday in our meeting, they are
11 rushing to fulfill the very tight deadline to
12 finish that task.

13 And then Commissioner Geesman and I will
14 have to deal with their recommendations, a lot of
15 material in the staff's reports that are on the
16 website, and come out with that document and make
17 it consistent as possible with where we know the
18 Climate Action Team is going at that point in
19 time.

20 Secondly, your reference to having
21 concerns with California acting alone. You made
22 four tiers, but somebody earlier created a three
23 tier analogy -- national, regional, and the state
24 of California.

25 And I noted in my mind at that point in

1 time, and I think it was pointed out that
2 California is in tier one, and I think
3 Commissioner Geesman pointed out, we're in tier
4 one trying to work within tier two, i.e. regional,
5 recognizing there are some benefits there. We're
6 in tier three working our way up to two, I should
7 say. Tier one I think we've all given up on, and
8 that was the national approach.

9 And I can't speak for the Governor, but
10 it appears to me he perhaps has given up on that
11 as well, indicating that the nation/state of
12 California, the world's fifth largest economy, has
13 got to act in this arena, particularly when you
14 see, the United Kingdom was here today and we
15 share a lot in common.

16 We do what we have to do as best we can.
17 California consistently finds itself having to be
18 at the head of the line and therefore getting shot
19 at consistently too in a whole lot of arenas.

20 And it's not because we like being
21 number one and certainly it's not because we like
22 being shot at, it's because we have an extremely
23 viable community and, I should say economy and a
24 community of citizens who are really interested in
25 both their economy and their public health, their

1 environment, their quality of life, and the future
2 of their state, their nation, and perhaps in this
3 case the planet.

4 So we will follow the guidance of the
5 Governor and this administration and do the best
6 we can, but it may be inconsistent with the
7 desires of some folks who would prefer to see a
8 national program.

9 I think it was hinted earlier in the day
10 that perhaps some people have as an objective
11 enough local and state and regional action such
12 that you all sue for peace at the national level
13 and convince the national administration that a
14 nationwide program would be better for the nation
15 rather than dealing with 35 or 43 local, regional,
16 I'll just say state programs, and so on and so
17 forth, so --.

18 Sometimes there's a method to our
19 madness, and that might be it.

20 MR. SPARANO: Just a quick observation,
21 and I take your point sincerely. While we are by
22 size, by economy, I think by contribution to the
23 US a nation/state, we're still just one of 50
24 states.

25 And my point was, on behalf of the

1 industry, we have some concern about setting
2 ourselves off because we are bigger and because we
3 perhaps deserve the status of nation/state, and
4 doing things that are simply applied to California
5 or even the western region, which we know from
6 other parts of the petroleum business has some
7 very unique aspects to it.

8 And then finding that, by so doing, we
9 allow other areas around our country and in this
10 case because it is an international issue, global
11 warming, just like the petroleum industry has
12 become a very international and global business,
13 we run the risk of putting our own businesses and
14 our economy as a result at a disadvantage versus
15 those other 49 states and 178 or however many
16 countries, I've lost track, and however many
17 planets that are still in our solar system, to
18 stretch the point.

19 But that was the main point that I
20 wanted to make, that there is that risk, there are
21 the unintended consequences of getting too far out
22 ahead of ourselves.

23 And I do thank you for taking the time
24 to listen to me.

25 COMMISSIONER GEESMAN: Thank you, Joe.

1 MR. SPARANO: We, I didn't mean to cut
2 you off, Commissioner.

3 COMMISSIONER GEESMAN: No, I think you
4 probably did me a favor by doing so.
5 (laughter)

6 MR. SPARANO: Which I sense did me a big
7 favor probably.

8 COMMISSIONER GEESMAN: We'll meet again
9 on another day, Joe.

10 Bruce Magnani, California Chamber of
11 Commerce.

12 MR. MAGNANI: Commissioners, thank you
13 for the opportunity to speak today, and thank you
14 for putting the workshop together.

15 In consideration of time, and many of
16 the things I'm going to say have been stated
17 already by Mr. Sparano and other members of the
18 panel today, but I did want to make a few points,
19 and stress these points.

20 And I think those have to do with job
21 retention and job creation in California, and
22 obviously being with the Chamber of Commerce that
23 is going to be our focus.

24 We do represent 15,000 businesses, and
25 75 percent of our membership are small business.

1 And any incremental costs in overhead has a
2 tremendous effect on their ability to do business
3 in the state.

4 So, in consideration of that, we think
5 that anything that is done must be meaningful,
6 have a meaningful benefit, and not disadvantage
7 California businesses, whether it be in a regional
8 or just simply statewide capacity.

9 The other thing is that, when you're
10 talking about petroleum fuels, the state has a
11 longstanding tradition of being fuel neutral, and
12 I think that's very important to us as well, is
13 that you, in moving forward with your program that
14 you not choose or select technology, that you
15 allow the marketplace to adapt and you set
16 standards to be met.

17 One of the examples, and I believe it
18 was the PG&E example on turning over to natural
19 gas vehicles, that compared to diesel they get a
20 20 percent decrease in CO2, but with new diesel
21 technology by 2010 that will be completely wiped
22 out, and the 2007 standard, the difference between
23 natural gas and a diesel vehicle are nominal at
24 best, very hard to measure.

25 So I think that the marketplace has

1 demonstrated that it can rise to the challenge and
2 I think that demonstrates the fact that you
3 shouldn't be choosing technology as you move
4 forward in your reductions of greenhouse gases.

5 Thank you.

6 COMMISSIONER GEESMAN: Thank you, Bruce.
7 You know, the UK representative that was here
8 earlier today said that their assessment was that
9 it was only their electricity intensive sectors of
10 the economy that were apt to face competitive
11 pressures as a result of their climate change
12 policies.

13 And I think that the fellow from
14 Washington state largely corroborated that view.
15 So I'd encourage you to focus on the employment
16 represented and economic value or production
17 represented by the electricity intensive portions
18 of the California economy.

19 And if you're able to share that
20 information with us down the road that would be
21 greatly appreciated.

22 Michelle Passero, Pacific Forest Trust.

23 MS. PASSERO: Hi, I will be brief.

24 Thank you to the Energy Commission and staff for
25 all the hard work they've done on this very

1 important issue.

2 Pacific Forest Trust wants to support
3 what Mendocino Redwood Company and John Nickerson
4 identified as policy recommendations in their
5 presentation.

6 If there is a cap and trade system that
7 is developed we do support the inclusion of the
8 forest sector with the crediting of forest
9 projects within that cap and trade system.

10 In going back to some of the research
11 that was mentioned this morning, I think there are
12 some great efforts that are underway. And I think
13 there's also a few areas of research that could
14 still be done that may in fact show that the
15 forest sector can contribute even more than I
16 think the 18 million metric tons of CO2 equivalent
17 that was mentioned yesterday.

18 California loses roughly 40,000 acres of
19 forest land each year, and there is greenhouse gas
20 emissions that are associated with this loss. We
21 need better data that identifies the amount of
22 greenhouse gas emissions that are associated with
23 forest land conversion.

24 I think there can be substantial savings
25 in this area as we develop policies to address

1 this issue.

2 Also, gathering data around carbon
3 opportunities on managed forest lands that
4 actually look at raising overall carbon stacks
5 across the landscape. We've looked at research
6 that looks at expanding riparian buffer zones and
7 extending rotations, but how one manages forests
8 in particular -- you may not do (unintelligible)
9 management or have rotations, so the broader
10 outlook of raising overall carbon stacks I think
11 would be very beneficial in identifying
12 opportunities.

13 And I'm not sure if Dr Hanemann's
14 research actually does this, he did mention that
15 they're looking at the climate impacts on the
16 timber industry, but I think more holistically
17 looking at climate impacts on forests and their
18 related resources, since forests do impact our
19 water resources by diversity and habitat.

20 Having the research include this, and
21 maybe it does but it wasn't clear to me this
22 morning, I think would be very beneficial. And
23 certainly there is a synergy between the impacts
24 of climate change on forests as well as the
25 forests' potential to sequester and mitigate the

1 impacts of climate change.

2 So looking at it a little more
3 holistically. One other policy suggestion is the
4 need to also consider how we couple the value of a
5 ton of carbon with other incentives. I think this
6 will have the capacity, again, to bring the forest
7 sector in to help address climate change issues.

8 These other incentives, then, could
9 include easements, perhaps permitting efficiencies
10 if people commit through permanent easements to
11 undertake efforts for the long term, in perpetuity
12 and perhaps tax credits.

13 And when this is combined then
14 potentially with a value for a ton of carbon, I
15 think you could actually have a greater impact
16 from the forest sector in climate change, as well
17 as all the other benefits that I mentioned.

18 So, that's it, thank you.

19 COMMISSIONER GEESMAN: Thank you very
20 much. Steve Heckeroth.

21 MR. HECKEROTH: Thank you for this
22 opportunity to be here. I'll just move ahead with
23 --.

24 Fossil fuel dependence is a double edged
25 sword. On the one hand you've got pollution and

1 climate change, and on the other depletion and
2 scarcity.

3 And I think that they're very tied
4 together and the way we should approach climate
5 change should also consider the finite nature of
6 fuel.

7 This chart is historical data, it's not
8 a projection. And in a more perfect world we
9 probably would have looked at it about 1950 and
10 said well, we're not discovering any more oil
11 resources in the US, and tried to come up with
12 some alternatives.

13 In a somewhat less perfect world we
14 might have looked at the peak of oil extraction in
15 1970, sometime around 1975 or '80, and said well,
16 maybe we should come up with some alternatives.

17 But, as you know, instead this country
18 seems to have the arrogance to think that we
19 should use the majority of the rest of the world's
20 oil supply as well.

21 But now we're running up against the
22 world peak of oil. So, taking this into
23 consideration I saw a lot of projections going out
24 100 years for instance, in terms of energy use.

25 And if we consider the fact that every

1 projection, even the most optimistic projections,
2 give us 40 more years to the peak, and most of
3 the mean projections give us about five years 'til
4 the peak, then going out 100 years doesn't really
5 make much sense.

6 So, we need to look at the current data
7 that we have, and these are books written by
8 geologists and scientists and others who know a
9 great deal about the subject, as well as these.

10 It's pretty mainstream now, when the
11 National Geographic comes out with it. But we
12 need to address alternatives very quickly, or
13 climate change will become kind of a self-limiting
14 factor because we won't have the fuel to create
15 the climate change gases.

16 I made this chart, and, you know, it's
17 been said a lot of times that transportation is
18 the biggest problem. And it shouldn't take too
19 much to look at the effect of fuel economy to see
20 what the savings would be in CO2.

21 Here we have a ten mile per gallon
22 Hummer. If you drive it 50 miles a day, and this
23 is at \$2.50 a gallon, it's \$375 a month. So that
24 doesn't make very much economic sense. And it
25 creates 21 tons of carbon dioxide a year. And if

1 you include the upstream costs that's 27.3 tons
2 per year.

3 And you go down the list here with the
4 Prius, at 50 miles per gallon, you're only
5 spending \$75 a month on fuel and you're only
6 creating five and a half tons of carbon dioxide.

7 And you go down to what I think is
8 arguably the best car ever built in Detroit, the
9 EV1, and you're down at zero carbon.

10 So why did GM repossess all the EV1's?
11 And why did they crush them? Presumably to make
12 more Hummers. But I think you would have done
13 them a great favor had California stood up to
14 their lawsuit, because now they're talking about
15 laying off 29,000 workers because they're so out
16 of touch with the public and what the public is
17 demanding that they can't sell their large SUV's.

18 So, in the future, I just would really
19 encourage you to stand up to the oil companies and
20 the auto industry, who I understand is currently
21 suing you again for your CO2 emissions standards.

22 And maybe just in closing propose to
23 WSPA that there is an international standard, and
24 if they want an international standard they should
25 probably encourage the President to accept Kyoto.

1 Thank you.

2 COMMISSIONER GEESMAN: Thanks, Steve.
3 Kenneth Colburn, Primary Energy.

4 MR. COLBURN: Thank you, Mr. Chairman.
5 In the interest of true confessions I need to
6 state that I'm a recovering air regulator from the
7 Northeast. That's a low species I know, but I'm
8 doing my best on it and am now operating as an
9 independent consultant to try to recover my way up
10 the food change.

11 And in the interests of full disclosure
12 i'd indicate that Primary Energy is a client and
13 I'm here assisting Mr. Hermanson.

14 COMMISSIONER BOYD: Ken, Ken, some day
15 you could be an Energy Commissioner. Watch the --
16 (laughter)

17 MR. COLBURN: But I go up to achieve
18 that, as opposed to down, correct, Commissioner?

19 I just wanted to offer a reflection on
20 Mr. Olson's question relative to cap and trade.
21 Primary is not here today to say that cap and
22 trade is the only or even the best approach to
23 reducing greenhouse gas emissions, but I did want
24 to call your attention that Mr. Hermanson's slides
25 did include that it is time for mandatory action.

1 A reflection on that is that, while
2 there have been great works indicated around the
3 table today and indeed yesterday as well, that
4 there's still over 1,600 megawatts of \$20 bills
5 lying on the ground and emitting greenhouse gases.

6 Apparently we need to have some
7 mandatory action to cause those \$20 bills to get
8 picked up. And I think indeed that history shows,
9 and indeed California history shows that
10 technology doesn't develop for the fun of it, it
11 develops to meet a need, often a mandate.

12 And once it does it develops more
13 rapidly than ever expected and produces outcomes
14 that are accomplished at much lower costs, often
15 on an order of magnitude, the beta is typically
16 around six to eight, than the projected costs that
17 were originally offered to the Commissioners.

18 So I would just close with that thought
19 and anecdote that I've shared in the past,
20 Commissioner Boyd may have even heard it or
21 others, that when you ask an engineer to do
22 something, e.g., a voluntary program, you get
23 nothing but problems.

24 You get I don't know if the materials
25 will be available, I don't know if the crane will

1 be there on time, tolerances accumulate
2 negatively, if I estimate this wrong my boss will
3 have my head, I better be conservative in my --.

4 And lo and behold, it turns out than
5 when you tell an engineer to do something you get
6 nothing but solution. Not all tolerances
7 accumulate negatively, not all worst case
8 scenarios actually occur, and that's why the costs
9 come in 8 to 10 times lower than projected.

10 Some of us would suggest, and I believe
11 it was on Mr. Hermanson's slide, that it is time
12 for some mandatory action of some sort, and that
13 in telling our technology companies and our
14 developers that it's time we will achieve similar
15 results that exceed our expectations, as they have
16 in the past.

17 Thank you very much.

18 COMMISSIONER GEESMAN: Thank you, Ken.
19 Loren Kaye, Cogen Works.

20 MR. KAYE: Thank you, Commissioners. I
21 just wanted to, well first of all associate
22 ourselves with the excellent presentation by Mr.
23 Hermanson, and to point out what I think is
24 obvious, that the low hanging fruit for your
25 consideration on greenhouse gases that can be

1 achievable in the immediate term is in the area of
2 cogen or combined heat and power, or, the first
3 time I've ever heard it referred to, as recycled
4 energy. I'll steal that one.

5 But the reason I got up here was to
6 implore you to not be either comforted or
7 distracted by a contention that 90 percent of the
8 QF contracts are going to be renewed in some
9 period of months or years, that that is a, perhaps
10 more of a fairy tale than the Goldilocks tale that
11 you referenced earlier.

12 In order to get this low hanging fruit,
13 in order to get the renewable of the QF contracts,
14 in order to get all the benefits that Mr.
15 Hermanson was talking to, it's going to take
16 leadership.

17 You two specifically have demonstrated
18 that, but it's going to have to go down the river
19 and across the street as well. So please keep at
20 it, please keep up that leadership.

21 COMMISSIONER GEESMAN: Thank you. Stay
22 tuned. Rod Aoki.

23 MR. AOKI: Thank you, Commissioners and
24 members of the panel. Rod Aoki for the
25 Cogeneration Association of California and the

1 Energy Producers and Users Coalition.

2 And Commissioners, given the hour of the
3 day and the fact that Commissioner Geesman might
4 be speaking to the choir, I'll truncate my
5 comments quite a bit.

6 First of all, we want to express our
7 appreciation again to the Commission for their
8 recognition of the environmental benefits of
9 cogeneration throughout the IEPR process. There's
10 a number of quotes that I could give to you but
11 I'd like to give you just one.

12 Recently, from the April 2005 assessment
13 of the California CHP market, where CHP was
14 described as "the most energy efficient and cost-
15 effective form of distributed generation, and
16 having among other benefits environmental benefits
17 both in the reduction of criteria pollutants and
18 emissions of carbon dioxide that contribute to
19 global warming."

20 I think that's perfectly consistent, as
21 you know, with Section 372A of the California
22 Public Utilities Code, which states that "it is
23 the policy of this state to encourage and support
24 the development of cogeneration as an efficient,
25 environmentally beneficial competitive energy

1 resource that would enhance the reliability of
2 local generation supply and promote local business
3 growth."

4 And to echo Mr. Kaye's statement, I
5 don't think there's any evidence at all that we've
6 seen that the QF canary is off the floor of the
7 cage quite yet. We have not seen any
8 quantification of that 90 percent figure and I
9 would suspect if we asked for it we might not be
10 able to see it as confidential data.

11 But moving forward, the question is, is
12 there some threat to the CHP that's currently
13 existing in California and serving customers? And
14 as you know, cogen represents a significant
15 portion of the generation in this state, 16
16 percent and 18 percent respectively of PG&E and
17 Southern California Edison's load.

18 As you also know, many of these
19 contracts are expiring at a significant rate over
20 the next few years. By the CPUC's own estimation,
21 approximately 1,000 megawatts by 2008 and 1,800
22 megawatts by 2010.

23 And so what becomes critical is how to
24 preserve these resources for the state and the
25 benefits that they provide, and I think the 2005

1 IEPR is the exact way to do that.

2 And again, I'll keep my comments short
3 and we'll file these in the original comments and
4 we'll be doing that again shortly after this
5 process, but the two proposals as the policy
6 matters that we'd like to make here today is that,
7 first of all, the IEPR should make preservation
8 and encouragement of CHP a goal. I think that
9 would go far to communicate that message for the
10 state.

11 And second, as we have mentioned before,
12 identifying CHP as a preferred resource and adding
13 CHP to the EAP loading order. We've seen it there
14 in the past, and we'd like to see it there in the
15 future permanently.

16 Thank you for your time and we look
17 forward to filing our written comments.

18 COMMISSIONER GEESMAN: Thank you very
19 much. Doug Wickizer. Louis Blumberg? Andrew
20 Hoerner?

21 MR. HOERNER: I'm Andrew Hoerner, I'm
22 Director of Research for Redefining Progress.
23 Redefining Progress is a nonpartisan think tank
24 located in Oakland, California.

25 My work for the last 14 years has been

1 mainly devoted to market approaches to
2 environmental mechanisms and the comments I'd like
3 to make today are based on work that we'll be
4 submitting later this month to the Governor's
5 subgroup on cap and trade.

6 I ask the Commission's indulgence in
7 allowing me to submit written comments to expand
8 my remarks.

9 There's a lot to say, I'll try to be
10 brief and quick. First of all, we think that
11 there are certain criteria and that any effort to
12 do long-term climate planning for the state should
13 start with a clear expression of the criteria that
14 that plant has to meet.

15 We would like to stress five such
16 criteria. First, that it should be effective,
17 that is to say it should meet the Governor's
18 targets with substantial certainty.

19 Secondly, it should be efficient, and
20 ideally good for the economy taken as a whole.

21 Third, that it should be fair. I think
22 these three are sort of the conventional three
23 criteria, and I hope there wouldn't be any
24 argument about them.

25 I'd like to add two more that are not

1 always discussed but that I think are very
2 important in today's environment.

3 The first is that the program we devise
4 should work for large reductions as well as small
5 reductions. Many programs achieve reduction and
6 will have distortions and surplus costs that the
7 percent reduction levels are tolerable, at 30
8 percent painful, and at 50 percent disastrous.

9 I think we should start by trying to
10 build a system that would work even for fairly
11 deep cuts, rather than building a system which is
12 pre-broken. As, for instance, I think the RGGI
13 is, for reasons I'll mention later.

14 The second thing is I think it's very
15 important that we realize that the California
16 system is likely to be regarded as a model for a
17 subsequent national system. And because
18 California is a relatively clean state it's
19 important to design a system that benefits
20 relatively clean producers in the state more than
21 relatively dirty producers.

22 So that when it's extended to a national
23 system you end up with a system that benefits a
24 relatively clean state like California.

25 So that's my list of criteria. Under

1 the criteria I'd like to say several things about
2 policy. First of all, cap and trade plus a
3 variety of sectoral technology initiatives,
4 voluntary and regulatory, versus sectoral
5 initiatives alone.

6 The advantages of cap and trade are,
7 first of all, it does guarantee that you actually
8 meet the Governor's target. So, the Governor's
9 charging you to meet targets. That's a
10 substantial benefit.

11 Secondly, cap and trade provides maximum
12 flexibility as to time, place and manner, thus
13 reducing costs. A very important and not always
14 appreciated factor is that cap and trade is very
15 important in encouraging people to enter and
16 participate in the other programs that you're, the
17 voluntary programs for instance, that you'll be
18 creating.

19 We took a close look at this in the
20 context of ozone depleting chemical programs. We
21 interviewed a lot of business managers and they
22 told us that, because they knew the caps were
23 coming, they got involved in all the voluntary and
24 technology advancement programs.

25 And that was one of the reasons that

1 ozone depleting chemicals were in fact phased out
2 under budget and ahead of schedule.

3 It promotes new technologies for the
4 reasons that were discussed earlier. Serves as an
5 inventory device -- and I would like to stress
6 that if you set caps at levels that meet the
7 Governor's targets and you're voluntary
8 initiatives do succeed in meeting the Governor's
9 targets the permits will zero price and no cost to
10 industries.

11 And then would only serve as an
12 inventory device. But if the voluntary measures
13 fall short they provide a backup.

14 Second point I'd like to make is that we
15 believe that a comprehensive cap and trade system
16 is very much preferred to single sector systems.
17 There are potentially very large differences in
18 reduction costs across sectors that the very able
19 work that we've seen from the Tellus Institute and
20 CCAP basically presented technologies that are
21 known and understood now.

22 That sets kind of an upper limit to the
23 cost, because the technologies that we don't know
24 now can come in cheaper and we don't know how much
25 cheaper, and we don't know what sectors they're

1 going to be in either.

2 So if we get low cost alcohol, or big
3 breakthroughs in battery technology to help us
4 with electric vehicles or any of a large number of
5 potential breakthroughs that we don't really know
6 what they are yet, a comprehensive system lets the
7 entire state reap the benefits of having found the
8 lowest cost emission reductions.

9 Partial systems may confine those
10 economic benefits to single and narrower sectors.
11 So the potential savings, especially as you
12 approach the farther out years, from having
13 comprehensive rather than a single sector system,
14 are quite large.

15 Third, we believe that we should use a
16 consumption based rather than a production based
17 system. With the electric sector that's what's
18 usually called a load-based system. That is to
19 say, the systems associated with the consumption
20 of electricity in California, not with the
21 production of electricity in California.

22 But I think that that's been discussed
23 to a great extent, it's fairly well understood, we
24 believe though that the same approach should be
25 adopted for other energy intensive goods that move

1 in interstate trade besides electricity.

2 For instance, cement, or petroleum
3 products. The use of applying the requirement for
4 permits to imports and providing rebates for
5 permits of exports fully and completely maintains
6 the competitiveness of California industries,
7 including the most energy intensive industries,
8 and so ameliorates concerns that could otherwise
9 be quite severe.

10 But it also fully and completely
11 prevents the problems of leakage that are
12 plaguing, for instance, the RGGI system.
13 Preliminary estimates look like 30 or 40 percent
14 of the total reductions that the RGGI system is
15 getting are just increased imports from out of
16 state, which provides no environmental benefit and
17 hurts the instate economy.

18 That's what I mean when I say we
19 shouldn't build a system that's pre-broken.

20 Fourth, we believe that it's -- I'm
21 going to take two things and kind of connect them
22 together -- an auctioned upstream system or a
23 grandfathered downstream system. I think those
24 are kind of, they're natural pairs.

25 Because a grandfathered upstream system

1 is just a little too transparently a huge transfer
2 of resources to the pockets of energy companies
3 for anyone to advocate it very strongly, and an
4 auctioned downstream system adds a lot of
5 complication to an auction that could be
6 equivalently done upstream with both economic and
7 environmental equivalents.

8 So the first thing I'd like to say is
9 that a downstream system poses a very significant
10 administrative burden. You need baselines for
11 perhaps thousands of companies, many of whom have
12 not historically participated in the California
13 Registry, you need rules for mergers,
14 divestitures, startups, the entire range of
15 complicate corporate restructurings that exist and
16 the asset value of the grandfather permits is very
17 large, and so you can expect that those rules will
18 be very heavily litigated, and in general the
19 administrative burdens are substantial.

20 For an upstream system, on the other
21 hand, you don't need any of those things. You
22 don't need rules for mergers, divestments, you
23 don't need rules for startups, you don't even need
24 baselines. People just buy what they need.

25 On the question of auction versus

1 grandfathering I'd like to stress, and I'll make
2 this point more extensively in my written
3 testimony, that grandfathered and auction systems
4 impose the same costs on all customers, including
5 industrial customers.

6 That they result in the same price
7 increase, and this is not a strange Andrew Hoerner
8 or Redefining Progress view, it's a conventional
9 economic view and it's easy to show if I could
10 draw you supply and demand graphs.

11 So I'll ask you to take it on faith for
12 the moment that the auction and the grandfathered
13 system impose the same cost on customers.

14 But they have very different effects on
15 the California economy. In a grandfathered system
16 the money collected from California consumers then
17 goes to the stockholders of the companies that
18 hold the permits, most of whom are out of state.
19 So it's basically pumping money and jobs out of
20 state.

21 On the other hand, an auction permit
22 system takes those jobs and recirculates it within
23 the state, creating jobs and strengthening the
24 state's economy.

25 It also provides an important source of

1 revenues for a large number of programs that
2 currently are recommended but unfunded to achieve
3 many of the energy and environmental goals that
4 the Commission is hoping to reach, and we believe
5 ultimately a portion of the revenue should also be
6 used to offset the regressivity of the burden of
7 environmental permitting systems.

8 So to summarize, we think that, we're
9 very pleased to see this process underway, we're
10 very excited by it, we think that we're at
11 something of a crossroads, that we can design a
12 system that is least cost, and a least cost system
13 today is going to take us into the future
14 effectively, that with proper design we can avoid
15 competitive burdens on the state while achieving
16 the benefits of energy efficiency and the
17 additional benefits that come from revenue
18 recycling. Thank you.

19 COMMISSIONER GEESMAN: Question on your
20 remarks on imports and exports. Have you had an
21 opportunity to give any thought as to the impact
22 of either the Interstate Commerce Clause or, in
23 the electricity sector, the Federal Power Act?

24 MR. HOERNER: Yes sir. More to the
25 former than to the latter. In fact I wrote a Law

1 Review article on that subject which I'd be happy
2 to forward a copy to the Commission.

3 COMMISSIONER GEESMAN: If you would I'd
4 appreciate it.

5 MR. HOERNER: This is an area which is
6 not very well understood in the environmental
7 community, but it's been thoroughly explored in
8 the public finance community because the desire to
9 impose a tax on imports, and rebate that tax on
10 exports, is very common and very well established.
11 There are dozens of taxes that do that.

12 And the Interstate Commerce Clause
13 implications of every combination of permutation
14 of doing that that you can easily imagine has been
15 explored in the court system. My piece is now
16 about eight years old so it's not entirely up to
17 date, but I think that the answer truly is that if
18 you treat imports the same way as you would treat
19 the same product were it produced in your state,
20 then you are not discriminating against the
21 imports.

22 And that is in general sufficient to
23 pass the four-pronged test of complete auto (?)
24 and it's progeny.

25 COMMISSIONER GEESMAN: What if your

1 state doesn't produce the same product as the
2 import against which you're establishing some tax
3 or other burden?

4 MR. HOERNER: That turns out not to
5 matter.

6 COMMISSIONER GEESMAN: I would
7 appreciate it if you would forward your article to
8 the docket.

9 MR. HOERNER: Sure.

10 COMMISSIONER GEESMAN: Thank you.

11 Anyone else care to address us? Anybody
12 on the phones? Okay, I want to thank all of you
13 for hanging in there with us on a long and I think
14 quite informative day. We'll be adjourned.
15 (Thereupon, the workshop ended at 5:28 p.m.)

CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter,
do hereby certify that I am a disinterested person
herein; that I recorded the foregoing California
Energy Commission Committee Meeting; that it was
thereafter transcribed into typewriting.

I further certify that I am not of
counsel or attorney for any of the parties to said
meeting, nor in any way interested in outcome of
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IN WITNESS WHEREOF, I have hereunto set
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